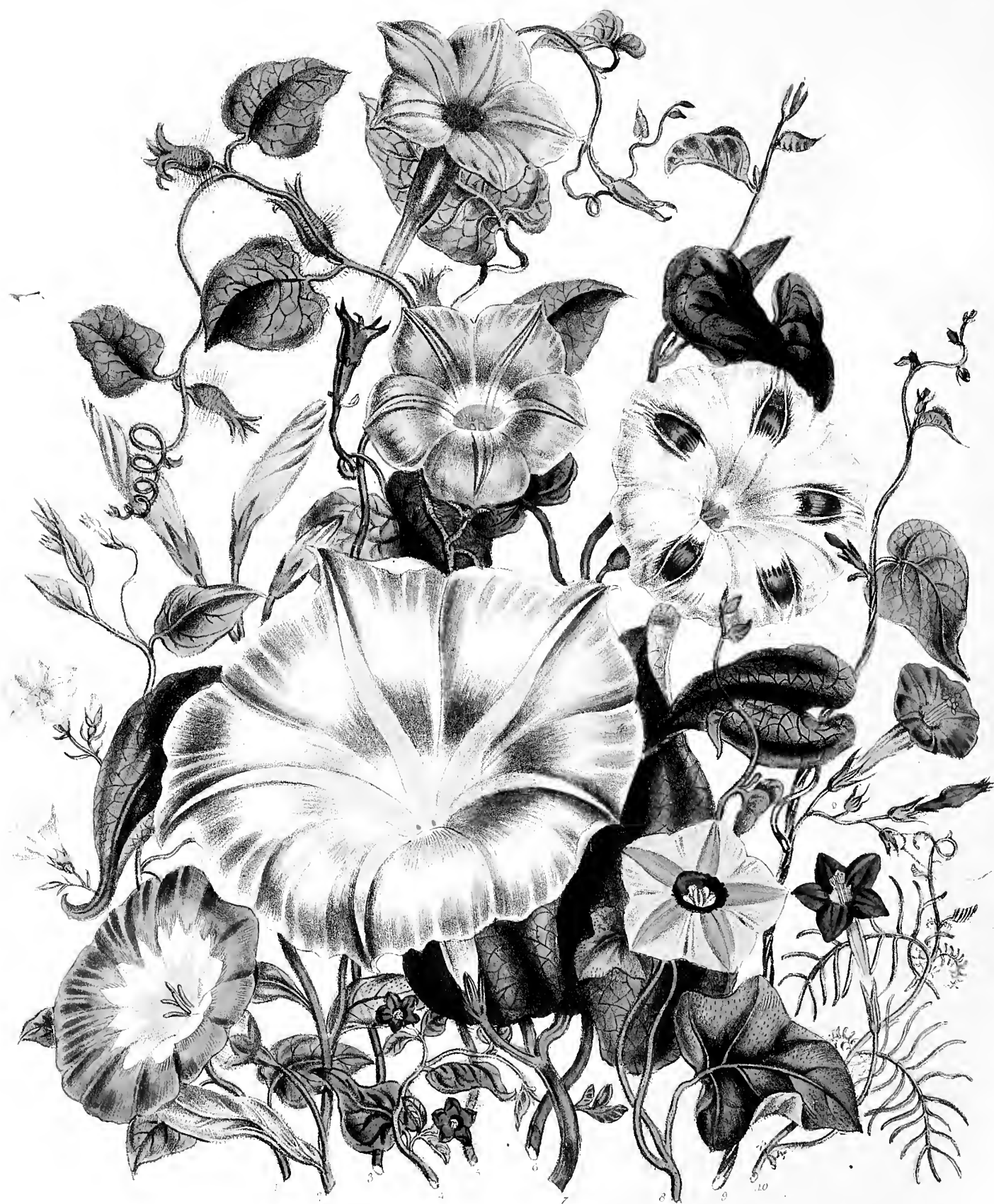


THE
LADIES' FLOWER-GARDEN.

Annals.

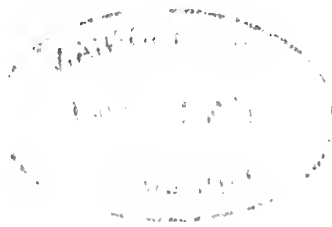
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1. *Convolvulus elongatus* — 2. *Convolvulus tricolor* — 3. *Ipomoea bona-nox* — 4. *Convolvulus secalis*.
 5. *Ipomoea barbiger* — 6. *Convolvulus purpureus* var. *elation* — 7. *Ipomoea rubra candelae* — 8. *Convolvulus involucri*.
 9. *Ipomoea pedunculata* — 10. *Ipomoea Lamprolita*.

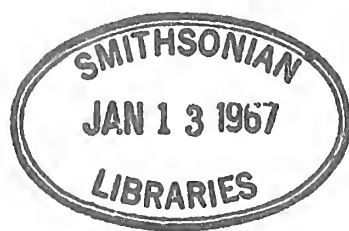
THE
LADIES' FLOWER-GARDEN
OF
ORNAMENTAL ANNUALS.

BY MRS. LOUDON.



LONDON:
WILLIAM SMITH, 113, FLEET STREET.

MDCCCXL.



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SB
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TO THE RIGHT HONOURABLE

THE COUNTESS RADNOR,

ALIKE DISTINGUISHED FOR

HER LOVE OF FLOWERS AND TASTE FOR THE FINE ARTS,

This Work is Dedicated

(WITH PERMISSION),

BY HER OBEDIENT SERVANT,

THE AUTHOR.

P R E F A C E .

It has long been my intention to publish a series of works, which, when completed, should contain coloured groups of all the most ornamental flowers in British gardens, as well those grown under glass, as in the open air. The present work, which is the first of this series, comprises the hardy and half-hardy annuals ; and the second will contain all the hardy and half-hardy bulbs. These will be followed by the biennials and perennials ; the greenhouse and hothouse plants ; the orchidaceæ and the cacti ; the roses and other ornamental shrubs ; and, lastly, the ornamental flowering-trees.

Each work will be complete in itself, so that the proprietor of a small town-garden, who can grow only annuals or bulbs, need only purchase the volume, or volumes, containing the plants he feels inclined to cultivate : while the proprietor of a greenhouse, or of any kind of hothouse, by purchasing the volumes containing the plants for each, may see at one glance the most ornamental flowers suitable for his purpose, and obtain directions for their culture. Besides this, as each work will be arranged according to the natural system, the whole series will form a more comprehensive illustration of the kind of plants belonging to the different orders, than any other work which has yet been published ; and it will therefore be very useful in giving young people general ideas of the arrangement of plants, and thus facilitating their study of botany.

It was originally my intention to give some plans of flower-gardens suitable for annuals at the end of the present work ; and similar plans at the end of each of the other works, suitable to the

different kinds of flowers contained in each. I have, however, relinquished this part of my plan, as Mr. London is now engaged in preparing a work on the Theory and Practice of Laying out Flower-Gardens, Shrubberies, and Pleasure-Grounds, in which the subject will be fully discussed and illustrated.

The very extensive sale of the present volume is perhaps the best proof of its usefulness, and of its being what I intended to make it; and I can only add, that no pains shall be spared to render the other volumes of the series equal to it in every respect.

J. W. L.

BAYSWATER,

Feb. 21st, 1840.

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- 273 5. *L. speciosa*. Showy Toad-flax.
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- 288 6. *N. glutinosa*. Clammy Tobacco.
- 289 7. *N. Persica*. Persian or Shiraz Tobacco.
- 290 8. *N. Langsdorffii*. M. Langsdorff's Tobacco.

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- 302 6. *H. aureus*. The Golden Henbane.

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307 5. *G.* (*Ericala*) *nivalis*. Snow *Gentian*.
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INTRODUCTION.

“THE love of flowers,” says Dr. Lindley, “is a holy feeling, inseparable from our very nature ; it exists alike in savage and civilized society ; and it speaks with the same powerful voice to the great and wealthy, as to the poor and lowly.” The truth of these observations must be felt by every one. We love flowers from our earliest childhood, and even in extreme old age the sight of them recalls something of the glow of youth. The love of flowers is calculated to improve our best feelings, and subdue our bad ones ; and we can hardly contemplate the beauty and richness of a flower-garden without feeling our hearts dilate with gratitude to that Almighty Being who has made all these lovely blossoms, and given them to us for our use.

Of all kinds of flowers, the ornamental garden annuals are perhaps the most generally interesting ; and the easiness of their culture renders it peculiarly suitable for a feminine pursuit. The pruning and training of trees, and the culture of culinary vegetables, require too much strength and manual labour ; but a lady, with the assistance of a common labourer to level and prepare the ground, may turn a barren waste into a flower-garden with her own hands. Sowing the seeds of annuals, watering them transplanting them when necessary, training the plants by tying them to little sticks as props, or by leading them over trellis-work, and cutting off the dead flowers, or gathering the seeds for the next year’s crop, are all suitable for feminine occupations ; and they have the additional advantage of inducing gentle exercise in the open air.

It is astonishing how much beauty may be displayed in a little garden only a few yards in extent by a tasteful arrangement of annual flowers. All that is required is a knowledge of the colours, forms, and habits of growth of the different kinds. Many of the flowers now grown in our gardens are not worth culture, but they are grown year after year, because their cultivators know them and do not know anything better. Many very beautiful flowers have been introduced, grown for a season or two, and then thrown out of cultivation from there being no demand for them ; and this want of demand has arisen from very few flower-growers being aware of their existence. It is true that most of these flowers were figured on their first introduction in one or other of the botanical periodicals ; but in

these works they are mixed up with greenhouse and hothouse plants and shrubs, which, of course, the mere grower of annuals can feel little interest in ; so that a person wishing to get coloured figures and botanical descriptions of all the finest annual flowers, must now purchase plates and descriptions of hundreds of other flowers that he has no need of.

The culture of annuals has two great advantages over the culture of all other flowers whatever. In the first place, it is attended with less expense than any other description of flower culture ; and in the second, all the enjoyment of which it is susceptible is obtained within the compass of six or eight months. Bulbous or tuberous-rooted flowers, like annuals, produce their blossoms in the first year ; but they are attended with an enormously increased expense. Perennial herbaceous flowers are never in perfection till the second year ; and, like bulbs, can only be beneficially purchased by such as anticipate retaining the occupation of their garden for several years in succession. The seeds of annual flowers, on the other hand, cost a mere trifle ; and the expense of stirring the soil, sowing them, and thinning them when they come up, is also very little ; while the effect produced is as great or greater than that of many bulbs or tubers, and most perennials. The flower of a choice hyacinth, the bulb of which will cost five or six shillings before planting, is not much more beautiful than that of a double rocket larkspur, which may be reared to perfection in three months, from a seed which will cost about the fiftieth part of a penny. Annual flowers therefore are, above all others, suitable for the gardens of suburban residences which are hired for not more than a year ; while they are equally fit for decorating all other gardens whatever, and peculiarly so for such as are defective in soil, situation, or exposure to the sun, as is amply shown in the *Suburban Gardener*.

Mr. Paxton, the chief manager of the gardens of His Grace the Duke of Devonshire, in a late Number of his excellent *Magazine of Botany*, observes, “ Considered as the principal ornaments of the flower-garden throughout the most delightful period of the year, and during a considerable portion of it as the most interesting features in the greenhouse, annual plants have great claims to our attention, and should be very extensively cultivated in every pleasure-garden. But the vast number and variety of sorts that are now known in our collections, the whole of which it is almost impossible to introduce into even the most extensive gardens, renders necessary a judicious selection of the best kinds, in order to compensate for any deficiency in number or variety, by the superior beauty of those which are admitted.”

Such a selection it is my object to offer to the public in the following pages. I shall endeavour to comprise in it all the ornamental annuals that the best judges whom I have consulted on the subject think really deserving of culture in a flower-garden ; and as my descriptions will be illustrated by plates by an able artist, lithographed and coloured from nature, the grower of annuals, by turning over this volume, may be enabled to select those which appear most suitable for his particular purpose.

In the arrangement of the present work, I intend to follow on a small scale the plan adopted by my husband, in his lately published *Arboretum et Fruticetum Britannicum*; and it will be my ambition to give as clear and full an account of the annual flowers, as he has there done of the trees and shrubs of Britain. In pursuance of this plan, I shall first give the Botanic and English names; next the synonymes, if any, and then the names of the modern English books in which the flower has been figured. To this, I shall subjoin a short botanical character, which will be followed by a popular description, with the geography, history, properties and uses, culture, and in short, everything worth knowing of the plant.

An important feature of this work will be the directions for the culture of each flower, as on this, in a great measure, the appearance of the flower-garden will depend. It is a common error, to suppose that all that is necessary to make a showy flower-garden is to sow the ground with a great many different kinds of flower-seeds. A few flowers of the most brilliant and ornamental kinds, arranged so as to harmonize in their colours and habits of growth, cultivated with care, and trained and pruned into regular and compact shapes, will produce more effect than three or four times the number sown injudiciously, and afterwards comparatively neglected. On looking into most flower-gardens, it will be found that the annuals are crowded together, each tuft having been left unthinned; and that the plants, having been neither trained nor pruned, present, as they grow up, the most tawdry appearance, without either the grace and elegance of wild nature, or the trimness and neatness of art. A flower-garden is essentially artificial; not only from the avowed art displayed in its general shape, and in the artistical forms of its beds, but in the flowers of so many different countries, and even climates, being brought together in the same locality; everything, in short, in the flower-garden, shows that it was planted by the hand of man; and the flowers themselves, to be in keeping with the garden, should show also the hand of man in their training. Some excellent observations on this subject by Mr. Loudon, will be found in the different volumes of the *Gardener's Magazine*, and more particularly in vol. xiv. p. 497.

The botanical names of the flowers in the following pages will be those by which they are most generally known by the seedsmen, but I shall give the best known of the other names as synonymes, with their authorities, always noticing the latest; and when practicable, without entering too much into detail, slightly mentioning the botanical reasons for the change. Notwithstanding this, I intend the botanical part of the work to be quite a subordinate feature, as I merely wish to give general ideas on the subject, and to render the work popular rather than too scientific. The botanical characters, however, though short, will be prepared with great care, and made as intelligible to the general reader as possible. The arrangement followed will be that of the Natural System, and I shall adopt that modification of it given by Dr. Lindley, in his excellent *Ladies' Botany*. The great advantage of the Natural System to a general observer, or to any one who does not wish to go deeply into the science

of botany is, that it presents the plants in groups ; each group consisting of plants which resemble one another in all their external features, as well as in their internal structure and properties. Hence, if any one knows at sight a plant belonging to any one group, he will have a general idea of all the other plants belonging to it. The advantage of this to a person who is beginning the study of plants, or who has even no higher ambition than to learn the names of a few of them, may truly be said to be incalculable ; as whenever he sees a new plant, he has only to consider what group it most resembles, to be able to form a general idea of all that is necessary to be known respecting it. As the interest felt in flowers is much increased when we know something of their structure, and of the functions which the several parts are destined to perform, I would advise such of my readers as have leisure for the pursuit, and as are not already acquainted with the subject, to study Dr. Lindley's *Ladies' Botany*, in which they will find the rudiments of the science explained in a most elegant and agreeable manner ; and so clearly, as to divest botany of that harsh repulsive form, in which it appears " to those who only know it through the uninviting medium of systematic works."

For the benefit of those who have studied the Linnæan System, the class and order to which each plant belongs according to Linnæus, or the latest improvements on his system, will be given immediately after the botanic and English names.

A glossary of the botanic terms used in the work will be given at the end of the volume ; and in the mean time, the most difficult will be explained the first time each word occurs. An alphabetical list of the authorities, explaining the abbreviations, such as *L.* for Linnæus, *Dec.* for De Candolle, &c., will be subjoined to the glossary ; and there will be a copious index to the whole work.

J. W. L.

BAYSWATER,

November 21st, 1838.



1. *Platystemon leiocarpus*—2. *Garridella nigellastrum*—3. *Adonis autumnalis*.

THE
LADIES' FLOWER-GARDEN
OF
ORNAMENTAL ANNUALS.

CHAPTER I.

RANUNCULACEÆ, *Dec.*

BOTANICAL CHARACTER OF THE ORDER.—Sepals and petals numerous. | into petals, and the petals into nectaries. Herbs and shrubs with
Stamens hypogynous (growing from beneath the pistils), numerous. | alternate leaves. Acrid and venomous.—(*G. Don.*)
Ovaria numerous, aggregate. In many genera the sepals are changed

DESCRIPTION, &c.—ALL the plants belonging to the order Ranunculaceæ, partake more or less of the character of the common crowfoot, or *Ranunculus*; that is, they have all several distinct carpels or seed-vessels growing close together, and their stamens grow from beneath these carpels. They have generally handsome flowers of brilliant colours. The stems of all these plants discharge, when broken, a thin watery juice, which is very acrid, so much so indeed that in some species it blisters the skin. The bruised leaves of some kinds, bound tightly on a slight wound, will produce an ulcer, and the seeds are poisonous if taken internally; these qualities are much stronger in some of the plants belonging to the order than in others, but they exist to a certain degree in all. Nearly all the kinds are perfectly hardy, and will grow in any soil, but most of them prefer a somewhat damp loam. They are nearly all very tenacious of life, and their seeds will keep several years without losing their vitality. The genera belonging to this order, which contain ornamental garden annuals, are, *Adonis*, *Delphinium*, *Nigella*, *Gerardia*, and *Platystemon*; the last forming the connecting link between *Ranunculaceæ* and *Papaveraceæ*, and being by many botanists classed in the latter order.

GENUS I.

ADONIS, *Lin.* THE FLOS ADONIS, OR PHEASANT'S EYE.

Lin. Syst. POLYANDRIA POLYGYNIA.

GENERIC CHARACTER.—Calyx of 5 sepals, generally attached at the | pinnate, parted into multifid lobes, with linear lobules. Flowers
base. Petals 5 to 15, with a naked claw. Stamens numerous. Carpels | solitary on the points of the stem and branches.—(*G. Don.*)
numerous, two-seeded, spiked, ovate. Cotyledons distinct. Leaves

DESCRIPTION, &c.—The *Flos Adonis* is remarkable for its slender branch-like leaves, and its small terminal flowers, the petals of which are smooth and shining, and peep from amidst the bushy leaves like little gems. Its

identity with the order Ranunculaceæ is shown by the numerous black stamens growing from beneath the heap of little green carpels in the centre, and by the distinctness of the carpels, which yet grow close together on the end of the flower-stalk, so as to form a head when the petals have fallen. Botanists enumerate seventeen different species of *Adonis*, besides varieties; and ten of these species are said to be annuals. Only two or three, however, are cultivated in British gardens; and all the annual kinds are, probably, only varieties of the common *Flos Adonis* (*Adonis autumnalis*), as they only differ in the size and colour of the flower, and the height of the plant

1.—*ADONIS AUTUMNALIS*, *Lin.* THE AUTUMN-FLOWERING FLOS ADONIS, OR
PHEASANT'S EYE.

ENGRAVINGS.—Smith's Eng. Bot. t. 308; 2nd edit. vol. v. t. 781; | conniving (that is, lying close together), scarcely larger than the calyx;
Curt. Fl. Lond. vol. ii. t. 37; and our *fig.* 3, in Plate 1. | carpels crowned by very short styles, and collected into an ovate
SPECIFIC CHARACTER.—Calyx smooth. Petals 6 or 8, concave, | head. Stems branched.—(*G. Don.*)

DESCRIPTION, GEOGRAPHY, HISTORY, &c.—The common *Flos Adonis* is a plant about a foot high, with numerous very finely cut leaves. These leaves grow in so bushy a manner, that they would almost conceal the flowers were it not for their intensely deep blood-red colour, which has obtained for the plant its French name of *Goutte de sang*. These flowers are small, cup-shaped, and produced at the extremities of the stem and branches, like little ruby crowns. The plant is found growing wild in corn-fields in every part of Europe, though it is by no means so common in England as on the Continent. Its principal British habitat is in Kent, on the borders of the Medway, between Rochester and Maidstone. It was cultivated in British gardens before 1597; as Gerard tells us in his *Herbal*, published in that year, that he brought the seed from the west of England, where it was growing wild among the corn, and sowed it in his garden "for the beautie of the flowres sake." This garden was in Holborn, which was then considered to be in the suburbs of London! In Gerard's time the *Flos Adonis* was called Red Mathes, and Red Camomile; but he adds, "our London women call it Rose-a-Rubie." Parkinson, in his *Garden of Pleasant Flowers*, published in 1629, mentions that it was then generally "brought into gardens for the beauty-sake of the flower;" and he adds that some considered it a kind of Camomile, and others, a kind of Anemone. The legendary history of the flower tells us that it sprang from the blood of Adonis, when he was wounded by the boar, and hence received its Latin name. The plant was dedicated to Venus; and, in the language of the flowers, it is considered the emblem of tender grief and melancholy recollections.

CULTURE.—Though the *Flos Adonis*, as we have already seen, has been cultivated in our flower-gardens for more than two hundred years, it has but little to recommend it as a garden flower. It should, indeed, never be cultivated, unless there be abundance of room; as the smallness of its flowers, and bushiness of its finely-cut leaves, give it rather a weedy appearance, and all plants of this kind ought to be carefully avoided in small gardens. In suitable situations, however, it is in some respects a desirable plant; as it requires very little culture, and will grow in any common garden soil. It will also grow in any situation that is not too high and dry; and the plants will thrive very well in a shrubbery, or under the drip of trees; though they will

not flower quite so soon if grown in the shade, as they will in an open border where they have the advantage of light and air. The seeds of this species sold in the seed-shops are, in fact, the carpels; and when they are quite in a fresh state they may be cut open, when the little black seed will be found attached on one side to the lower part of the carpel, which it does not a quarter fill. The carpels sold in the seed-shops are however generally too dry to be cut open, and they may be sown entire, as the carpel will open at its natural division in the ground when the seed begins to germinate. The dry carpels are quite as good as the fresh ones for sowing, as the seeds are not at all injured by keeping. When the place where the seeds are to be sown is fixed on, the ground should be loosened with a fork and broken very fine; after which it should be made perfectly level, and raked. Several little circles should then be made (their number, and the distance they are from each other, depending on the quantity of flowers wanted), and if the ground be tolerably dry, this may be done by pressing on it the bottom of a flower-pot saucer, about three inches or four inches in diameter, in every place where a circle is to be made. On the smooth level surface of the circles thus formed, a very few seeds (not more than six or eight in each patch) should be spread; the saucer should then be again applied, so as to press them gently into the soil, and thus to fix each seed in its proper place. The operation of sowing is concluded by drawing the earth displaced by the saucer over the seeds, so as to cover them about twice their own thickness, or say, about the eighth of an inch. In dry sandy soils, the covering may also receive a slight pressure from the saucer; but this is unnecessary unless the soil should be very loose. If the soil should be wet, the saucer must not be used at all, as part of the soil would stick to it, and thus the circle could neither be rendered smooth before sowing, nor the seeds be pressed firmly into it afterwards. In spring, when the soil is very dry, a slight watering may be given to the seeds after sowing, by a watering-pot having a very fine rose; but this must be done very carefully, as too much water would wash the seeds out of their places. When the sowing is finished, a flat piece of wood, called a name-stick or label, should be inserted in the centre of each patch, with the name of the plant, or a number marked upon it; or a round stick may be used with a cleft at the top, in which the paper that contained the seeds, if it has the name upon it, may be stuck, having been first neatly folded up. When danger is apprehended from birds, or vermin, or from the scorching effect of the sun, a flower-pot may be whelmed over the patch, and kept on till the seeds are above ground, when it should be taken off immediately, and not put on again. The reason for instantly removing it, when the seedlings appear above ground, is, that if it were kept on even for a few days, the young plants would be drawn up, and their stems would become so elongated, and consequently so weak, that they would never recover it. It is always an object to keep flowering plants strong and bushy, as when the stems are long and weak they have not only an unhealthy and untidy appearance, but the flowers are never so large or so rich in colour as they are when the plants are well grown. An inverted flower-pot is better than any other covering for protecting seeds, not only from its cheapness and simplicity, and from its having the advantage of being almost always at hand in a garden, but because, while its sides shade the ground from the sun, and exclude the powerful action of the air, thus lessening evaporation and keeping the soil moist, the hole in the bottom admits a sufficient quantity of light and air for the purposes of germination. After the plants have obtained two or three leaves each, they should be thinned out, so as to leave not more than three or at most four plants in each patch; or if the soil be good and the plants vigorous, even one or two plants in each patch will be sufficient to form a handsome tuft or bush. In general the fewer plants that are allowed to remain in a patch, the more vigorous and handsome will be the

bush or tuft of leaves and flowers produced. The plants of *Flos Adonis*, which are pulled up in thinning, may be thrown away, as they rarely succeed when transplanted. The plants being naturally stiff and bushy, they will not require either pruning or training; but as to look handsome they should have plenty of room to spread on every side, the plants left after thinning should be as far from each other as possible; and a space of at least a foot or eighteen inches should be left clear round the patch. After this, they will need no other culture than an occasional watering if the weather should be very dry. As the *Flos Adonis* will stand the winter perfectly well, the time of sowing may depend on the time when it is wanted to flower. If sown in September, it will be in full flower by the middle or end of April; and if sown again in March, say the first week, it will come into flower about midsummer. If some seeds are sown on light soils in wet weather in July, they will flower from October to February if the weather be mild. Seeds may be procured at any seed-shop.

OTHER ANNUAL KINDS OF ADONIS.

These as before observed are all probably only varieties of *A. autumnalis*; and the only one of them, the name of which is to be found in nurserymen's catalogues, is *A. æstivalis*, the summer-flowering Pheasant's Eye. *A. vernalis*, a pretty dwarf plant with large handsome yellow flowers, is marked in many catalogues as an annual, but it is a perennial.

2.—*A. ÆSTIVALIS*, *Lin.*; *A. A. MINIATA*, *Jacq.*; *A. MACULATA*, *Waltr.*,—

has the stem elongated and the flowers on footstalks. It flowers rather sooner than the common kind; but as the flowers are much smaller, and as the long unbranched stem has a straggling untidy appearance, it is not worth cultivating. It is a native of England, and also of the continent of Europe, but it is not so common as *A. autumnalis*.

3.—*A. MICROCARPA*, *Dec.*

This is a dwarf plant with orange-coloured flowers, and numerous very small carpels. It is a native of Spain, and also of the island of Teneriffe, whence it was brought to this country in 1824. It is a neat bushy little plant, flowering in June and July, and is well deserving of cultivation, but it is very seldom found in British gardens.

4.—*A. CITRINA*, *Hoff.*,

has the stem not branched, and the flowers small and yellow. It is a native of France, and was introduced into England in 1819; but it was soon lost in this country, and has not been thought worth a re-introduction.

5.—*A. FLAMMEA*, *Murr.*,

has flame-coloured flowers, which are not so cup-shaped as those of the common kind. It is a native of Austria, and was introduced into England in 1800, but it does not appear to have been much cultivated.

In addition to these kinds which have been introduced into Britain, we may mention one, which, though it has not yet been introduced, appears well worthy of so being. This is called *A. dentata*; it has yellow petals with black claws (the claw is the part that is nearest the stalk), and the carpels are toothed, or rather crested, on



1. *Delphinium tenuissimum.* 2. *Delphinium Ajacis* flores pleno.
 3. *Delphinium Ajacis* fl. pl. purpurascens. 4. *Delphinium Ajacis* fl. pl. alba.
 5. *Delphinium consolida.*

the back, whence the name. It is a native of Egypt and the isle of Cyprus, and from the description appears to be the handsomest of the genus. Decandolle, in his "*Prodromus*," calls it *A. dentata* var. *orientalis*, and mentions another *A. dentata*, a native of France, which has flame-coloured flowers, but which resembles the Egyptian plant in its crested seed-pods.

GENUS II.

DELPHINIUM, *Lin.* THE LARKSPUR.*Lin. Syst.* POLYANDRIA TRIGYNIA.

GENERIC CHARACTER.—Calyx deciduous, petal-like, irregular, with the upper sepal drawn out below into a spur. Petals 4; 2 upper ones drawn out at the base into appendages, within the spur.—*G. Don.* flowers. Twenty-three species are annuals. Natives of the south of Europe, and north of Africa; also, of Asia Minor, and Nepal in Asia, and Pennsylvania and Virginia in North America.

DESCRIPTION, &c.—The flowers of the larkspur are so common that they do not excite half the attention that their curious construction well deserves. In them the sepals of the calyx, and the true petals of the flower at first sight, can scarcely be distinguished from each other. When examined closely, however, the calyx will be found to be composed of five sepals, one of which forms a kind of horn, and the shape of which is visible in the bud. When the flower expands, the true petals show themselves: they are four in number, and two of them have long tails, which are hidden in the horned sepal. This curious construction has given rise to both the English and botanic names; the horned sepal being something like the hind claw of the foot of the lark, and the bud bearing a fancied resemblance to a dolphin; delphinium signifying a dolphin. The old English name was lark's-heels; and the Nasturtium (*Tropæolum majus*) was called yellow lark's-heels.

1.—DELPHINIUM CONSOLIDA, *Lin.* THE BRANCHING, OR WILD LARKSPUR.SYNONYME.—*D. segetum. Lam.*

ENGRAVINGS.—Eng. Bot. t. 1839; 2nd edit. vol. v. t. 769; and our fig. 5, in Plate 3, of the single pink variety.

SPECIFIC CHARACTER.—Stem erect, smoothish, with spreading branches; flowers few, loosely racemose; pedicels (footstalks) longer than the bracteas; carpels smooth.—(*G. Don.*)

VARIETIES.—These are very numerous, even in a wild state. *D. consolida* is found with red, pale-reddish, lilac, pinkish, and white flowers, though the usual colour is a very dark blue. The garden varieties are generally double, and they consist of the white, blush, rose-coloured, lilac, light purple, dark purple, and striped, which last is sometimes also called unique.

DESCRIPTION, &c.—The branching larkspur, in good soil and favourable situations, will grow to the height of two feet or three feet, with numerous, slender, spreading, alternate branches. The leaves spring from the branches without footstalks; they are downy, and are divided into numerous linear segments. The flowers are thinly set on the raceme, and being on footstalks, hang much more loosely than those of the rocket larkspur (*D. Ajacis*). The sepals in the wild flower of *D. consolida* are of a dark-blue on one side, and have a pinkish tinge on the other: the petals are pinkish, and form a curious kind of hood in the centre of the flower. The carpels grow generally two together; they contain numerous seeds, which are black and shining, and the taste of which

is acrid. These seeds are poisonous. The stem is rather slender, in proportion to its height, and widely-spreading branches, and the plant has a long tap root, more like that of a perennial than that of an annual. It is said to flower in a wild state in June and July; but in gardens it is much later than the dwarf larkspur, and seldom comes into flower before August.

The branching larkspur is generally found in corn-fields, and is a native of Europe, and some parts of America. In England, Sowerby tells us, "it abounds in the open chalky or sandy fields in some parts of Cambridgeshire, Suffolk, and Kent." It was known to the Greeks and Romans, as it is described by Dioscorides and Pliny. In England it is mentioned by Tusser, in his list of garden flowers in 1572; so that the single kind has been in cultivation since the time of Elizabeth. The double kind is first mentioned by Parkinson, who says, "Of larkes'-heeles there are two principall kindes; the wild kinde is of two sorts, one which is with us noursed up chiefly in gardens, and is the greatest; the other, which is smaller and lower, often found in our plowed landes, and elsewhere. Of the former of these wilde sorts, there are double as well as single; and of the tame, or more upright, double also and single, and each of divers colours, as shall be set downe." The "wilde sort" is evidently *D. consolida*; and "the tame, or more upright," *D. Ajacis*. The branching larkspur was formerly called *Flos regius*, and *Consolida regius*; the latter name, which signifies joining or uniting, being given to the plant, as some say, from its supposed power of healing wounds; but, as from its acrid properties, it would be more likely to inflame wounds if applied to them than to heal them, the name more probably alludes to the growing together of the carpels. The bruised plant is said to be still used as the principal ingredient in some kinds of cosmetics; but it ought to be employed cautiously, as though its acidity may at first clear the skin, it cannot fail, if its use be persevered in, to destroy it.

The French names for this plant, of Dauphinelle, Pied d'Alouette, and Eperon de Chevalier, are evidently derived from the shape of the flower; and it is remarkable, that the German, Italian, and Spanish names for the plant all signify knight's spur.

CULTURE.—The seeds of the branching larkspur should be sown in the same manner as directed for those of the *Flos Adonis*; and the young plants should be thinned out in the same manner, the plants drawn out being thrown away, as from their tap roots they will not bear transplanting. There should never be more than three left in a patch, and they should be as far asunder as possible, as if the plant be not allowed abundance of room, it will from its spreading habit become deformed, and one side will be much larger than the other. When the plant has attained its full size, it will be necessary, unless the plant should be very strong, to support it by tying it to a neatly-painted stake, to keep it upright, and to prevent it from being broken by the wind. The branching larkspur should never be sown with the rocket larkspur, as they do not flower at the same time, and their different habits of growth do not harmonise. In some situations the single wild kind is very ornamental, from the intense blue of the centre of its flowers, while the violet, or pinkish tinge on the back, gives them somewhat the effect of shot silk. Dr. Lindley, speaking of one of the perennial species which resembles this kind in colour, says, "All plants of this description are seen to the greatest advantage on the skirts of shrubberies, or on banks, where it is required to produce a wild and rough effect. If it can be so contrived that their flowers are shaded during the day, and brightly illuminated by the setting sun, or that they are placed so as to droop over streams of water, where the freshness and moisture of the air prevent their rapid fading, a brilliancy of colour is effected by masses of them, which we shall in vain attempt to procure in any other way."—*Bot. Reg.* 2nd Series, t. 54.

2.—DELPHINIUM TENUISSIMUM, *Sib. et Fis.* THE SLENDER-BRANCHED LARKSPUR.SYNONYMS.—*D. divaricatum*, *Ledeb.* *D. pubescens*, *Dec.*ENGRAVINGS.—*Swt. Brit. Flow. Gard.* 2nd Series, t. 366, and our *fig. 1*, in Plate 3.SPECIFIC CHARACTER.—Pubescent. Stem branched and spreading. Pedicels rising from the middle of the bractæas.—(*D. Don.*)

DESCRIPTION, &c.—The whole plant is covered with a fine down. The stem is slender, growing about a foot high, and spreading into numerous branches. The flowers are small, and of a reddish-purple, and are not on a raceme, but on very long footstalks. This gives the plant a peculiarly light and elegant appearance. The plant was found by Pallas, on the banks of the Volga, and by Dr. Sibthorp, on Mount Hymettus, near Athens. This species is quite hardy, and it was raised in the Botanic Garden, Chelsea, in 1837, from seeds sent there by M. Fischer, Director of the Imp. Bot. Gard. at St. Petersburg. It is most nearly allied to *D. consolida*.

3.—DELPHINIUM AJACIS, *Lin.* THE UPRIGHT, OR ROCKET LARKSPUR.ENGRAVING.—Our *figs. 2, 3, and 4*, in Plate 3.

SPECIFIC CHARACTER.—Stem erect, smoothish, almost simple, with the branches hardly diverging. Flowers in long dense racemes. Pedicels the length of the bractæas. Carpels pubescent.—(*G. Don.*) Erect plants, natives of Tauria.

VARIETIES.—These are very numerous, not only differing in the colour and doubleness of the flowers, but in the height of the plant. The principal kinds enumerated in the nurserymen's catalogues, are, the tall rocket, the dwarf rocket (see *fig. 2*, in Plate 3), the double white (see *fig. 4*), blue, rose, flesh-coloured, dark purple (see *fig. 3*), and variegated, the common striped, the unique (red and white), the tall German, and the dwarf German; all which kinds are very ornamental, and quite hardy. Parkinson, speaking of the double varieties of this species, says, their flowers "stand like little double roses, laid

or spread broad open, without any heeles behinde them, very delightful to behold, consisting of many small leaves growing together, and after they are fallen, there comes up in their places three or four small pods set together, wherein is contained, here and there (for all are not full of seede, as the single kindes), blacke seede, like unto all the rest, but smaller, which being sowed, will bring plants that will bare both single and double flowers againe; and it often happeneth, that it variably altereth in colours from its owne sowing; for none of them hold constantly his owne colour (so farre as ever I could observe), but fall into others, as nature pleaseth." The justice of these remarks must be acknowledged by every one who has raised double larkspurs from seed, as they vary very much. All, however, are beautiful, and their variety is consequently an advantage rather than the reverse. Our figures were drawn from specimens in Lee's nursery, Hammersmith.

DESCRIPTION, &c.—The rocket larkspur is of a compact habit of growth, with nearly sessile flowers, which indeed appear set round the raceme, instead of depending from it; and this dense mass of blossom has made this species a great favourite in flower-gardens ever since its introduction, now above two hundred and fifty years ago. It was the custom in the last century to fill jars or vases with large flowers, and to set them in the grates or fireplaces during summer; and we find all the early writers on flower-gardens mentioning, as an inducement for cultivating particular flowers, that they would be suitable for this use. The double larkspur was a favourite chimney flower; so much so indeed, that Miller, speaking of it in his Dictionary, says, "For gathering, to make flower-pots to adorn rooms, there is scarcely any so proper; because, by their upright growth and long spikes (of flowers), they rise to a proper height above the pots; and when their several colours are skilfully introduced, they make a rich appearance, and continue a long time in beauty."—(*Mart. Miller.*) This species, when grown in gardens, flowers nearly a month before *D. consolida*, if both are sown at the same time; so that when they are wanted to flower at the same time, it should be sown much earlier. It is not however desirable to grow them together, as from the partial resemblance of their flowers, and great dissimilitude of their growth, they produce a heterogeneous effect.

The rocket larkspur is a native of Tauria in the Crimea; but it is now found to come up spontaneously in

many parts of Europe. It was brought to England in 1573 from Switzerland, and on this account it is frequently described in books as a native of that country. The specific name, *Ajaxis*, is taken from some spots or streaks observable in the flower, which have been supposed to resemble the letters A. J. A., and to stand for Ajax. The legend is that when Ajax stabbed himself in a fit of frenzy, this flower sprang from his blood.

CULTURE.—The rocket larkspur requires a very rich soil to bring it to perfection; and, if possible, it should be fresh soil, that is, soil that has not been before used for flower-beds. As, however, it would be very expensive to renew all the soil in the beds or borders where the rocket larkspur is to be sown, an experienced gardener, eminent alike for his practical and scientific knowledge, who has been so kind as to give us his advice on the subject of culture, tells us, that the best way is “to take rich soil—say turfy friable loam, with one half quite rotten dung, in a barrow or basket; and, with a light flower-border spade, to take out six inches or eight inches square of the common soil, and to the depth of at least twelve inches. The hole thus formed must be filled with the rich soil, the surface of which should be smoothed, and the seeds sown immediately.”—*D. B.* The seeds may be sown in the same manner as those of *D. consolida*; or they may be sown in lines, a deep furrow being made with a planting-stick, and filled in with the compost, and the seeds sown on it. “If you are fanciful,” says the same excellent gardener whom we have before quoted, “you can level the surface of a bed, draw the initials of your name, or the full name, with a stick; and, taking out the soil according to the shape of the letters, you can fill in the hollow with compost, and then sow the seeds. Or any other device may be executed with these plants, they are of such neat and symmetrical growth. For example, a rainbow might be formed of the double dwarf varieties, by arranging them according to their different colours.”—*Idem.* In all cases, and particularly when compost is used, the seeds should be carefully sheltered from heavy rains, either by a flower-pot, or in some other manner, as will be hereinafter directed. When the young plants come up, they should not be much thinned, as from the compact habit of the plants they require but little room; and they should be seen in masses to produce an effect. They must always be sown where they are intended to remain, as they will not bear transplanting. This species will not require staking. The usual time for sowing is from the middle of March to April, in which case the plants will flower in July, and they should never be sown at any other season when compost is used; but grown in the common ground, they may be sown in autumn, and Rea tells us, that “one of these winter plants is worth ten of those raised in spring, and will yield more good seed.”—(*Rea's Flora, Ceres, &c.*, p. 187.) Like all the *Ranunculaceæ*, the seeds (which are black and rough) will keep good several years. The seeds of *Delphinium consolida* and *D. Ajaxis* may be purchased in any seed-shop; but those of *D. tenuissimum* can only be had from a botanic garden.

OTHER SPECIES OF LARKSPUR.

The following kinds have been introduced, but we do not know where they are in cultivation. Probably some of the names may prove to be synonymes, and some of the kinds only varieties of *D. consolida*.

4.—*D. OLIVERIANUM*, *Dec.*,

has the stem erect, and not much branched; the flowers are few, and hang loosely on longish pedicels; they are very large, and of a bluish purple. The plant is a native of cultivated fields near Bagdad, and was introduced in 1825.

5.—*D. ACONITI*, *Lin.*

Stem erect, much branched, pedicels (footstalks) very long, spur horizontal, incurved and cleft at top. The flowers are of a livid hue, variegated with purple and green on the inside. It is a native of the Levant, and is said to have been introduced in 1801, but it has probably been much longer in the country.

6.—*D. AMBIGUUM*, *Lin.*,

has the flowers in loose racemes; their colour is blue, and they resemble those of *D. consolida*, except that they are downy on the outside. It is a native of Mauritania, and was introduced in 1759. The name of this species is in some of the London nurserymen's catalogues, but the seeds sold for it are often those of *D. consolida*.

7.—*D. CARDIOPETALUM*, *Dec.*

The flowers, which are crowded on the racemes, are of a dull bluish violet, and the petals are somewhat heart-shaped at the base. It is a native of the valleys in the Pyrenees, and was introduced in 1818.

8.—*D. JUNCUM*, *Dec.*; *D. PEREGRINUM*, *Lin.*;

is a handsome species with bluish violet flowers, the petals of which are variegated with white. It is of the branching kind, with the flowers in lax racemes. It is a native of the south of Europe and the shores of the Mediterranean, and was introduced in 1629.

9.—*D. VIRGATUM*, *Poir.*

Another branching larkspur, a native of Syria; with pale green leaves, and bluish purple flowers. It was introduced in 1823.

All these kinds, with the exception of *D. cardiopetalum*, are nearly allied to *D. consolida*; and may possibly be only distinct varieties of that species.

GENUS III.

NIGELLA, *Tourne.* THE GARDEN FENNEL FLOWER, OR LOVE IN A MIST.*Lin. Syst.* POLYANDRIA PENTAGYNIA.

<p>GENERIC CHARACTER.—Calyx of 5 coloured, petal-like sepals. Petals small, from 5 to 10, two-lipped, with a hollow, honey-bearing claw. Stamens numerous. Carpels more or less connected together, and terminated by the elongated styles, opening on the inside; many-seeded.—(<i>G. Don.</i>) Erect plants with the leaves finely cut like</p>	<p>fennel. The flowers are solitary, at the points of the stem and branches; and the seeds have an acrid aromatic taste like pepper. They are natives of the south of Europe, Asia Minor, and the north of Africa. All the species are annual. There are several kinds in cultivation in British gardens.</p>
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1.—*NIGELLA DAMASCENA*, *Lin.* THE ROMAN, OR DAMASCUS *NIGELLA*, OR COMMON FENNEL FLOWER.

SYNONYMS.—*Nigella Romana*, *Hort.* Love in a Mist, Devil in a Bush, St. Katherine's Wheel, &c.

ENGRAVINGS.—*Bot. Mag.* t. 22; and our *fig.* 5, in Plate 2.

SPECIFIC CHARACTER.—Anthers blunt. Carpels 5, 2-celled, connected, even to the summit, into an ovate globose capsule; flowers surrounded by a leafy involucre; sepals spreading.—(*G. Don.*)

DESCRIPTION, HISTORY, &c.—Love in a Mist is a very common flower in gardens. This species is generally about a foot high, with numerous fennel-like leaves, and a very pale blue solitary flower at the extremity of each shoot. It was mentioned in the general botanic character of the order *Ranunculaceæ*, that some of the genera belonging to it, had the sepals changed into petals, and the petals into nectaries. This is the case with the present genus. The pale blue leaves which constitute the ornamental part of the flower, are, in fact, the sepals of the calyx, while the real petals are rolled up into what may be called little bags for secreting honey, and are called nectaries. The carpels in the whole genus of *Nigella*, differ from those of most of the *Ranunculaceæ*, in growing partly together; and in this genus they are so united as to form one head, or capsule, each carpel containing numerous seeds, which are slightly attached to it like peas in a pod. When ripe the carpels become dry, and open at the top, to discharge their seeds. These seeds are not poisonous unless taken in great quantities, though they have a sharp, acrid, biting taste. The capsules, when the flowers have dropped, are, from their elegant vase-like form, almost as ornamental as the flowers. There are several varieties of *N. Damascena*, some with pure white, and some with double flowers; but they do not appear sufficiently distinct to merit separate descriptions, as they will all spring up from seeds of the same pod. In all the flower is surrounded by a leafy involucre, which remains on, and surrounds the capsule after the flower is gone.

The common *Nigella* is a native of Italy, and of the south of Europe generally, where it is found wild in corn-fields, whence its popular name of *Nigella Romana*. It is also called *N. Damascena*, because it is said to have been brought to England from Damascus in 1570. It was probably, however, introduced before that period, as in the edition of Tusser's *Five Hundred Pointes of Good Husbandry*, published in 1572, which included some directions for gardening, *Nigella Romana* is enumerated among the flower-seeds directed to be sown in March, as though it were then a common plant, which it could hardly have been if it had been only two years in the country. The generic name of *Nigella* is supposed to be derived from *Niger*, in allusion to the blackness of the seeds; but London and Wise, in the *Retired Gardener*, tell a legend of a wicked nymph, who was changed into this plant, which was afterwards called *Nigella*, to commemorate the blackness of her heart. In floral language the *Nigella* signifies doubt and uncertainty, or embarrassment.

Perhaps no plant had ever more popular names than the *Nigella*. It is called the Devil in a Bush, from the appearance of its horned carpels peeping through its bushy leaves; Love in a Mist, from its pale blue flowers being surrounded by a mist of leaves, blue being the colour dedicated to true love; love in a puzzle, a name which seems to come from the same origin; St. Katherine's Wheel, in allusion to the shape of the flower when fully expanded; Gith, that being the Saxon for a weed growing among corn; and garden fennel-flower, which appears the most appropriate name, from its leaves resembling those of fennel. It was formerly also called Bishop's Wort in Cambridgeshire, perhaps from the projecting styles which rise above the flower, bearing some slight resemblance to a crosier; and in the time of Gerard, *Melanthium*, from the Greek word *melania*, blackness, though now the

name of *Melanthium* is given to a Cape of Good Hope bulb. In the like manner, in the West Indies, the name of love in a mist is given to a kind of passion flower (*Passiflora foetida*), which resembles the *Nigella* in having a leafy involucre surrounding the flower. The French names for the *Nigella*, of *Cheveux de Venus*, *Patte d'araignée*, and *Barbe bleue*, are all evidently derived from the circumstance of the flower being surrounded by leaves.

The Roman *Nigella* is a very common flower in gardens, and it is found in all the published lists of flower-seeds from the time of Tusser to the present day. Gerard praises it for its medicinal virtues, and tells us that it was mentioned both by Hippocrates and Galen as a stimulant. London and Wise, in 1706, give particular directions for its culture as a border flower; recommending it to be sown in sheltered beds in autumn, and planted out into the open border in spring. Its value as an ornamental flower, however, appears to have sunk during the succeeding fifty years; as in a little tract called the *London Gardener*, published in 1760, it is only mentioned as a flower no one would be without "for the sake of its strange appearance." This strange appearance is probably the reason why it is still cultivated, though now so many much more beautiful flowers have been introduced. It is certainly not worthy of a place in a small garden.

CULTURE.—This is extremely simple. It may be sown in the same manner as the *Flos Adonis*; and, like that plant, it requires a somewhat moist and sheltered situation. When it has been once introduced, if care be not taken to cut off the seed-pods before they are ripe, the seeds will sow themselves, and the plant come up like a weed. Its compact bushy shape and erect stem render training and pruning unnecessary; but thinning is essential, as, if the plants are left thick, they will be drawn up with naked stems, and have that untidy and tawdry appearance we have already alluded to. The seeds are generally sown in March; but when wanted to flower particularly early, they may be sown in autumn, as they will stand perfectly well through the winter.

2.—NIGELLA NANA, Hort. THE DWARF NIGELLA.

SYNONYMES.—*N. coarctata*, Gmel.; *N. Damascena*, var. *Hortus Kewensis*.

ENGRAVING.—Our fig. 1, in Plate 2.

SPECIFIC CHARACTER.—Anthers blunt; flowers of a greenish white, and with a leafy involucre.—(*G. Don.*)

DESCRIPTION, &c.—A little bushy plant, seldom above six inches high; very neat and compact in its habit of growth, and having very large flowers in proportion to its size. These flowers are of a greenish white, and are generally semi-double. There is another kind of dwarf *Nigella* with blue flowers, the seeds of which are sometimes sold in the seed-shops as those of *N. nana*; and another called by the seedsmen the new white *Nigella*, both of which are only varieties of this kind. The origin of the dwarf *Nigella* is not known, but it is probably only a variety of *N. Damascena*, as its capsules exactly resemble those of that species. There is a figure in Gerard of a plant which he calls *Nigella flore albo multiplici*, which strongly resembles this; but the date assigned for its introduction in the *Hortus Britannicus* is 1793; and it does not appear in any of the nurserymen's catalogues of flower-seeds prior to that time. It is a pretty little plant, very suitable for small front gardens; or for any situation where it will be near the eye; though, like the common *Nigella*, it may be considered as more curious than beautiful. Its culture is exactly the same as that of the common kind.

3.—NIGELLA HISPANICA, *Lin.* THE LARGE SPANISH NIGELLA.SYNONYME.—*N. latifolia*.—*Mill. Dict.*ENGRAVINGS.—*Bot. Mag.* t. 1265, and our *fig.* 3, in Plate 2.

SPECIFIC CHARACTER.—Anthers pointed; styles from 8 to 10, spreading. Carpels with a crested ridge running down the back, partly distinct, but connected below the middle into an obconical fruit.

Stem erect, smooth, and with the branches pointing upwards.—(*G. Don.*)VARIETY.—*N. Hispanica*, 2 *alba*, *Hort.*, see *fig.* 4, in Plate 2.

This very showy and distinct variety has white, or rather cream-coloured flowers.

DESCRIPTION, HISTORY, &c.—This is, in fact, the only beautiful species of the genus. The flower is very large and handsome, with the carpels rising boldly like a pillar in the centre. The flowers of the species are of a deep rich mazarine blue; and when they fall, the carpels are almost, if not quite, as ornamental. They are strongly marked with a brownish red dotted crest, which runs up the back of each; and their points spread out so as to form a kind of radiated crown, to the vase-shaped capsule formed by their union below. The plant is about a foot and a half high, and is of a bushy compact habit of growth. The Spanish *Nigella* is a native of the south of Spain, and Barbary, where it is common in the corn fields. It is perfectly hardy, and will grow in any soil; yet notwithstanding this, its beauty, and the circumstance of its having been in cultivation since the days of Parkinson (1629), it has never been common in British gardens; and, while the common *Nigella* is known to everybody, comparatively few persons have ever even heard of the Spanish kind. It flowers in June and July, nearly a month earlier than the common species, and is very ornamental. There were beautiful specimens of it in flower in the summer of 1838, at Ronald's nursery, Brentford, and Lee's nursery, Hammer-smith, from the latter of which our drawings were made.

CULTURE.—The soil for the Spanish *Nigella* should be loamy, rather rich than otherwise, and the situation somewhat sheltered. If the soil be poor or dry, and the situation too much exposed, the plants will not take handsome shapes, and the flowers will neither be large nor richly coloured, without a great deal of watering. The ground may be prepared and the seeds sown in the same manner as directed for *Flos Adonis*; and the young plants thinned out when they are two or three inches high. There is however this difference, that as the plants of the *Flos Adonis*, which are taken out of the patches when they are thinned, are to be thrown away, they may be pulled up by hand; whereas the plants of all the *Nigellas* will bear transplanting, and as it is worth taking this trouble with those of the Spanish kind, they must be taken up with more care. For this purpose, the plants to be transplanted should be carefully raised with a trowel, and taken up, if practicable, with a little mould attached; at all events care should be taken not to injure the fibrous roots, the spongioles at the extremities of which are the mouths of the plant through which it takes its food. Should any of the fibrils be bruised, or otherwise injured, they should be cut off above where they are hurt; as this will induce the plant to throw out new ones, instead of wasting its strength in fruitless efforts to heal the wounds. Before the plant is taken up, a hole should be made with a stick, or small dibber, in the ground to which it is to be transferred; and when the root of the plant is put into this hole, the mould should be crumbled in round it, and afterwards pressed down with the hands, in such a manner as to give the root, especially at its lower extremity, a firm hold of the soil. It may here be observed that if the plant be only made firm by pressing the earth round its collar, that is, just at the surface of the soil, it will in all probability die, or at least it will not thrive; whereas if the root be made firm at its lower extremity, and the earth filled closely in upon it, the plant will grow and prosper; even though the earth should be quite loose round the collar. The common way in which gardeners transplant



1 2 3 4 5 6

1. *Nigella nana* — 2. *Nigella involucrata* — 3. *Nigella Hispanica* —
4. *Nigella Hispanica* var. *alba* — 5. *Nigella Damascena* — 6. *Nigella Orientalis*.

hardy annuals, is by making a hole with a dibber, or planting-stick, the form of which is conical, then inserting the plant, and holding it with the left hand, while with the right another hole is made about an inch from the first, and the dibber moved in such a manner as to close the first hole, and in so doing to press in the earth against the root of the plant from the bottom to the top: the second hole is then closed by a little earth drawn into it by the point of the dibber. In this way a great number of annuals may be transplanted in a comparatively short time; but as it requires some dexterity, which can only be acquired by practice, to avoid bruising the tender stem and root of the young plant with the dibber, the novice in gardening had much better use the first method we have described, and make the roots firm with the hands. When a plant is transplanted in wet weather, it does not require so much care as when the weather is dry. As soon as the young plant is fixed in its new situation, unless the weather be wet, it should be watered; not only to wash the small particles of earth in amongst the fibrils, but to afford nourishment to the plant; as when there is abundance of moisture it is absorbed by every part of the root, instead of being only taken up by the spongioles. When a plant is transferred to a dry soil without watering, the spongioles wither up, and the plant dies, unless a sufficient quantity of water is afterwards given to the root to enable it to form new spongioles. If the weather be dry, the newly-transplanted plant should be shaded from the sun for a day or two, by a flower-pot, put on in the morning and taken off at night, to prevent the evaporation from the leaves being greater than the moisture taken up by the root. When a plant is firmly established in the soil, the quantity of moisture absorbed by the root, and that carried off by the leaves, is exactly proportioned; but transplanting of course weakens the root, and renders it incapable for a day or two of performing its usual functions.

The Spanish *Nigella* is so handsome a flower that it may be planted in any garden; and when the dark-blue kind is combined with the white variety, a splendid effect may be produced. Could the following species, *N. orientalis*, be procured and planted in the same group, its yellow blossoms would form a striking contrast with the above. The seeds of the Roman, dwarf, and Spanish *Nigellas*, may be purchased in any seed-shop.

4.—NIGELLA ORIENTALIS, *Lin.* THE ORIENTAL, OR YELLOW-FLOWERED NIGELLA.

ENGRAVINGS.—Bot. Mag. t. 1264, and our <i>fig.</i> 6, in Plate 2.	straight. Seeds flat, orbicular, and girded with a membranous margin.—(<i>G. Don.</i>)
SPECIFIC CHARACTER.—Carpels from 5 to 10, smooth, connected together from the base almost to the middle, hardly diverging. Styles	

DESCRIPTION, &c.—This species is remarkable for the colour of its flowers, and the long styles that stand up in their centre. The flowers themselves are small, but their colour is a bright yellow, and thus they form a striking contrast to those of the other species of the genus. The carpels are very remarkable when the flowers have fallen, though they are not so ornamental as those of *N. hispanica*. The carpels of *N. orientalis* are quite distinct, except at their inner edge, where they are slightly attached from the base to about the middle. This species is a native of Asia Minor, and Syria, and it is common in the corn-fields near Aleppo, and in Eastern Caucasus, and Middle Iberia. It was introduced in 1699, and was grown in Lee's nursery, and other places, within the last twenty years; but it appears to have gradually fallen out of cultivation for want of a demand, and it is probably now lost. It might however be easily again procured if it were much asked for; and it is worth growing, for the sake of the effect it would produce in patches with the white and blue Spanish *Nigella*.

OTHER SPECIES.

Though all the kinds of *Nigella* mentioned below are mentioned in botanical works as having been introduced, and even the dates of their introduction given, we think it very doubtful whether the seeds of any of them would be procured for sowing from any of the seed-shops. We enumerate them, however, in case any one curious in plants should wish to grow them, as it may be safely taken for a rule, that a demand for any given article in such a country as Britain will always be followed by a supply. In this case, nurserymen may easily get the seeds, as it is one of the characteristics of the order that the seeds of the plants belonging to it may be kept a long time without losing their vitality; and by writing to the director of some botanic garden in the country of which the plant is a native, a few seeds may always be obtained, which the nurseryman will soon multiply sufficiently to enable him to supply the demand.

5.—NIGELLA SATIVA, *Lin.*

This is a tall-growing plant, with bluish flowers, which have no involucre. It is found wild in corn-fields near Montpellier, and on the opposite African coast of the Mediterranean. It is a plant of no beauty, but it is said to be cultivated to some extent in the south of France for its seeds, which are used in adulterating pepper. They have a pleasant aromatic smell, and a hot acrid taste, not unlike that spice; and they were formerly in general use instead of it, and also as a carminative medicine. *N. sativa* was the first species of the genus grown in British gardens, for Turner mentions it in his *Names of Herbes*, published in 1548, as being then growing at Syon Gardens, near Brentford. There are two varieties grown in France, and one in the East Indies; but except one, which has blue flowers, they only differ in some trifling particulars from the species.

6.—N. CORNICULATA, *Dec.* THE HORNED FENNEL FLOWER.

This species has the points of the carpels very stiff, and arched outwardly, like horns. It is a dwarf plant, with yellow flowers, and round flat seeds. It is said to have been introduced in 1820, but it is not stated of what country it is a native.

7.—N. ARVENSIS, *Lin.* THE FIELD FENNEL FLOWER.

This species resembles *N. sativa* in its general appearance and properties, but its carpels are smooth, while those of *N. sativa* are warted. It is a native of the shores of the Mediterranean, and was introduced in 1683.

8.—N. ARISTATA, *Sib. and Smith, Fl. Græc.*, t. 510,

has the anthers pointed, and the carpels connected into a turbinate fruit; the stem is smooth, and the flowers, which are blue, are surrounded by a leafy involucre. It is a native of the country near Athens, and has almost the habit of *N. Damascena*, growing about a foot and a half high. It may be the same as *N. involucrata*, Hort., see our fig. 2, in Plate 2, a kind grown in the Hammersmith nursery, but which we have been unable to find under the name of *N. involucrata* in any of the botanical catalogues.

9.—N. INVOLUCRATA, *Hort.* Our fig. 2, in Plate 2.

This species or variety does not appear to have been described in any books, and we are not aware of its being grown in any nursery except that of Messrs. Lee, at Hammersmith. It appears, from the form of its capsule and its flower, to be nearly allied to *N. nana*, and it may possibly be the blue variety of that species. It is however a much taller plant, being from a foot to a foot and a half high.

GENUS IV.

GARIDELLA, *Tourn.* THE GARIDELLA.*Lin. Syst.* DECANDRIA TRIGYNIA.

GENERIC CHARACTER.—Sepals five, hardly petal-like. Petals five, two-lipped, bifid. Stamens ten to forty. Carpels two or three, many-seeded, connected together into a capsule with two or three very short horns.—(*G. Don.*) There are two species, only one of which has been introduced into Britain.

1.—GARIDELLA NIGELLASTRUM, *Lin.* THE NIGELLA-LIKE GARIDELLA.ENGRAVINGS.—Bot. Mag. t. 1266; and our *fig. 1*, in Plate 1.SPECIFIC CHARACTER.—Petals sessile, spreading. Stamens from ten to twelve.—(*G. Don.*)

DESCRIPTION, &c.—This curious little plant is very nearly allied to *Nigella orientalis*. It grows about one foot or eighteen inches in height, with a very slender stem, and multifid leaves, with linear divisions. The flowers are small, but when closely examined they are pretty. It is a native of “sunny places among the olives and vines of Provence, &c.” It was introduced in 1736, but has been long out of cultivation, except in botanic gardens. The generic name was given to it by Tournefort, in honour of Dr. Garidel, a physician at Aix, and the author of a work on the Plants of Provence, published in 1719. The culture of the *Garidella* is similar to that of *Nigella*; except that the seeds may be sown closer, and the plants need not be so much thinned out; as they will look best in a mass, on account of the slenderness of the stems and smallness of the flowers.

GENUS V.

PLATYSTEMON, *Benth.* THE PLATYSTEMON.*Lin. Syst.* POLYANDRIA POLYGYNIA.

GENERIC CHARACTER.—Sepals three, ovate, deciduous, hairy. Petals six. Stamens numerous. Filaments dilated, membranous, and obcordate. Anthers linear, erect. Carpels from nine to twelve ranged side by side. Stigmas linear, erect, and simple. When mature, slightly cohering, indehiscient, cartilaginous, twisted, separated into one-seeded transverse joints. Seeds smooth, not crested. Albumen oily.—(*Benth.*)

DESCRIPTION, &c.—This is a most remarkable genus; it forms the connecting link between the *Ranunculaceæ* and *Papaveraceæ*, and is by many botanists considered as belonging to the latter order. Dr. Lindley, however, in the last edition of his admirable *Introduction to the Natural System*, has placed it in *Ranunculaceæ*, to which order, indeed, it appears naturally to belong, from the yellow watery juice discharged by its stems when broken, and by its petal-like filaments—a great peculiarity of the order *Ranunculaceæ* consisting, as Dr. Lindley observes, “in the strong tendency exhibited by many of the genera to produce their sepals, petals, and stamens, in a state different from that of other plants.” Only two species of *Platystemon* are known, both of which are annuals; and they are natives of North America, and the north of Europe.

1.—PLATYSTEMON CALIFORNICUM, *Benth.* THE CALIFORNIAN PLATYSTEMON.

ENGRAVINGS.—Bot. Rec. t. 1679.

SPECIFIC CHARACTER.—The whole plant hairy and spreading. Leaves | lanceolate, in threes. Scape axillary. Flowers of a pale sulphur, or lemon-colour; carpels hairy.—(*Benth.*)

DESCRIPTION, &c.—The stem spreads about three feet or four feet from the roots; but instead of rising erect, it reclines on the ground, gracefully curving upwards at the extremity of the shoots, which produce the flowers. The leaves and stem are of a pale bluish green; and the flowers, which are fragrant, vary in different situations from cream-colour to a pale yellow. The whole plant has a remarkably elegant and delicate appearance, without being fragile. The stem is somewhat succulent; and when it is bruised, there issues from it a thin yellow juice. The leaves are long and narrow, and grow always three together; and they are quite hairy, as well as the stem. The flower-stalk is very long. The calyx, which is of a reddish-brown, is divided into three sepals, which fall off as soon as the flower is expanded. The filaments are very remarkable, as instead of being long and thread-like, they look like Vandyke-shaped petals with the points uppermost. The carpels are numerous; they are placed side by side, and when young they are slightly united at the edges, but when they become mature they separate, and each will be found to consist of numerous jointed cells, each containing one seed, slightly attached to one side. In this curious construction of the carpel, *Platystemon* bears a close resemblance to the genus *Hypecoum*, which we shall speak of hereafter.

The *Platystemon californicum* was discovered by Mr. Douglas, botanical collector to the London Horticultural Society, in California, and seeds and dried specimens of it were sent home by him in 1832, under the name of *Boothia*; but there being another plant with a nearly similar name, Mr. Benthham, who first described it in the *Horticultural Society's Transactions*, called it *Platystemon*, from two Greek words signifying broad stamen, in allusion to the extraordinary breadth of the filaments. The seeds sown in the Horticultural Society's garden came up, and flowered but very sparingly the following year; and, as the plants died without maturing their seed, the species was supposed to be lost. It has, however, been re-introduced, and is now abundant in the nurseries and seed-shops.

CULTURE.—The *Platystemon*, being a native of the colder part of California, is quite hardy, and will grow in any common garden soil. It may be sown as directed for *Flos Adonis*, but when it comes up it should be thinned out, and only one or two flowers left in each patch, as it spreads very much; and in favourable situations one plant will cover a space three feet or four feet in diameter. It flowers abundantly, and in situations where it is not too far from the eye, it is very ornamental. The plants taken out in thinning may be transplanted.

2.—PLATYSTEMON LEOCARPUM, *Fisch. et Meyer.* THE SMOOTH-FRUITED PLATYSTEMON.ENGRAVINGS.—Floral Cabinet, vol. ii. p. 129; and our *fig. 1*, in Plate 1, copied from it.

SPECIFIC CHARACTER.—Carpels smooth.

DESCRIPTION, &c.—This plant, though described as a species, appears to be nothing more than a smooth-fruited variety of *P. californicum*. It was raised in the Birmingham botanical garden, from seeds sent there in 1837 by Professor Fischer from St. Petersburg. It is not stated of what country it is a native, but from the seeds being sent from the Russian capital, it is supposed to be a native of the north of Europe. It grows and flowers as luxuriantly as *P. californicum*, and ripens its seeds equally well. It flowered for the first time in the summer of 1838, in the Birmingham botanic garden.



1. *Papaver horridum*.

2. *Papaver algericum*.

3. *Papaver nudicaule*.

4. *Papaver somniferum*.

5. *Papaver Rhoeas*.

6. *Papaver Pinnatifidum*.

CHAPTER II.

PAPAVERACEÆ.

BOTANICAL CHARACTER OF THE ORDER.—Sepals 2. Petals 4 or 8. | globose, or elongated and silique-formed. Herbs yielding milky
Stamens numerous, hypogenous. Capsule valveless, and nearly | juice.—(*G. Don.*)

DESCRIPTION, &c.—THE plants belonging to this order are easily distinguished by a common observer from those belonging to Ranunculaceæ by their juice being milky instead of watery. Botanically, they differ in the calyx, which separates into only two sepals, as may be seen by the bud of the poppy, instead of three or six; and in the number of the petals of their single varieties, which are always either twice two, or twice four. The seeds also are numerous, and contained in one capsule or pod, instead of being in several distinct carpels growing near together. The stamens grow below the seed-vessels, in the same manner as those of the Ranunculaceæ. Plants belonging to this order are poisonous, but not in the same degree as those belonging to Ranunculaceæ, and their poison is narcotic or stupifying, and not acrid. The poison of the Papaveraceæ is confined to their milky juice. They are natives of Europe, Asia, America, and the south of Africa.

GENUS I.

PAPAVER, *Lin.* THE POPPY.

Lin. Syst. POLYANDRIA MONOGYNIA.

GENERIC CHARACTER.—Petals 4. Stamens indefinite; style wanting. Stigmas 4 — 20, radiating, sessile, connected, crowning the top of the ovary. Capsules obovate.—(*G. Don.*)

DESCRIPTION, &c.—All the poppies are strong vigorous-growing plants, bearing their showy flowers on very long footstalks. These flowers never last long, many of the kinds dropping their petals the very day that they expand, and all leaving a large obovate capsule which contains an enormous number of seeds. These seeds, when young, are disposed along some thin shelf-like divisions, enclosed in the capsules, but as they ripen they become loose, and the outside of the capsule, from being green and succulent, becomes of a pale brown, and hard, dry, and brittle. The points of the stigmas remain and form a sort of cover over this capsule; and immediately under each stigma-point is a little valve-like opening, through which the seeds fall out when the poppy-head is reversed. The milky juice of the poppy is more narcotic than that of any other genus of the order.

1.—PAPAVER SOMNIFERUM, *Lin.* THE OPIUM BEARING, OR LARGE WHITE GARDEN POPPY.

ENGRAVINGS.—Eng. Bot. t. 2145; 2nd edit. vol. v. t. 756; Wood's Med. Bot. t. 185; and our *fig.* 4 in Plate 4.

SPECIFIC CHARACTER.—Capsules obovate, or globose, smooth. Calyx smooth. Stem smooth and glaucous. Leaves stem-clasping, repand-toothed, teeth bluntish.—(*G. Don.*)

VARIETIES.—De Candolle mentions two distinct kinds; one having white seeds, and the other black. There are, however, many garden varieties, some double and some semi-double; some with fringed petals, and others having white petals, delicately bordered with some dark colour; some are variegated, or streaked, and others of only one

colour; all the variations, however, consist of different shades of red or purple, mixed with white, and without the slightest tinge of either blue or yellow. All the kinds are very ornamental, and when judiciously intermixed, they produce a fine effect in a tolerably large garden; though they take up too much room to look well in a very small one. The single wild kind has white petals, with a very dark purple or almost black spot, at the base of each; and this is the kind principally cultivated in France and Belgium for its seed to make oil, and in Turkey and India for opium. The *Papaver Marsellei* sold in some of the seed-shops is the white-seeded variety of this poppy.

DESCRIPTION, &c.—The white garden, or opium poppy, grows in favourable soils to the height of three or four feet. Its leaves are oblong, and sometimes eight inches or ten inches in length, embracing the stem at their base, and placed alternately; they are smooth, rather thick, and of a bluish green. The flowers are produced singly at the extremities of the stem and branches. The bud, before it opens, hangs down, but when the flower expands, the part of the stem which supports it becomes erect, as though better to display the splendour of its colours, and the beauty of its form. The flowers do not last long, either when left in a growing state, or when gathered, and they have a disagreeable smell. The capsule is very large, and it is quite smooth. When the flowers fall, it is green and succulent, and if wounded yields a milky juice, which, when dry, is the opium of the shops. The capsule is surmounted by a kind of lid formed by the extremities of the stigmas; and this cover remains on, even after the seed is ripe, and the capsule becomes hard, dry, and brittle. Under this lid are eight or ten little openings, formed by a little point of each division of the capsule turning down immediately under the projecting point of each stigma; these little openings are to discharge the seed. When the seeds are first formed they are in slight divisions, but when they become ripe they are quite loose, and may be easily shaken out through the little openings without breaking the capsule. The quantity of seeds produced is enormous. Linnæus states that he found 32,000 seeds in one single head. The seeds of the kind most commonly grown in gardens are black, or very dark brown, and very small; but those of the white-seeded variety are much larger, and are flat and oval. The seeds should be used as fresh as possible, as they do not keep.

The opium poppy is a native of the warmer parts of Asia, but it has been so long grown in Europe that it has become, in a great degree, naturalised; and it is found in a wild state not only on the continent, but occasionally in Britain. It is extensively grown in Flanders for the oil which is made from its seeds, and it is also cultivated for this purpose in the south of Europe. It is cultivated in India for its opium, but the best opium is grown in Turkey, and Asia Minor. Opium has been occasionally produced from poppies grown in the south of France and in Britain. In 1796, Mr. John Bull, of Williton, obtained a reward from the Society of Arts for cultivating the poppy, and obtaining opium from it, "in no respect inferior to the best Eastern opium." Mr. Bull calculated that each poppy produced about a grain of opium, and that more than 50 lbs. of this drug might be collected from a statute acre. (See *Trans. Soc. Arts*, vol. xiv., p. 260—3). Some years afterwards, Mr. Young, a surgeon at Edinburgh, also succeeded in procuring opium of excellent quality, and in considerable quantity; and he found that an acre of poppies yielded 56 lbs. of opium, and the seeds 375 quarts of oil. (See *Trans. Soc. Arts*, vol. xxxvii.) These results, however, could only be produced in favourable seasons, and with extraordinary care; and consequently, all attempts to grow opium on a large scale as a profitable speculation in Britain, have

failed. It is, indeed, much to be lamented, that time, energy, and capital, should be wasted in striving to overcome difficulties of climate. The art of the cultivator should rather be directed to assist nature than to oppose her; and it is only when it is thus employed that it can be attended with success.

The name of papaver is said to be derived from the Celtic word pap, from the decoction of the poppy being mixed with the food of children. Somniferum is sleep-bearing. The French call this species *le pavot des jardins*.

THE COMMERCIAL PRODUCTS OF THE WHITE, OR OPIUM POPPY.

These are opium, oil, the seeds as an article of food, and the dried capsules. When the poppies are grown for opium, the ground is well ploughed and carefully manured before the seeds are sown; and when they come up, the plants are regularly watered till the petals of the flowers drop, and the capsules are about half ripe. At this period, and while they are yet quite green and succulent, they are in a fit state for yielding the opium. In the evening, a number of persons, each armed with a sharp lancet, pass along the rows of poppies, making in each head two or four incisions, according to its size, and taking care not to penetrate through the rind to the inner cavity of the capsule. The milky juice that exudes from these incisions hardens during the night, and the following morning it is scraped off with an iron tool. This substance, which is called tears of opium, is the drug in its purest state, before it is prepared for the market. When a sufficient quantity has been collected, it is kneaded with a wooden spatula in the sunshine till it becomes like dough; it is then, in Turkey, formed into flat cakes, and covered with the reddish capsules of a species of *Rumex*, after which it is wrapped in numerous poppy or tobacco leaves. In India, after kneading, it is put into saucers, or shallow earthen basins, and kept in a shady place till it is dry; and when packed up for exportation it is only wrapped in leaves, without being covered with capsules. There is an inferior kind of opium, formed by boiling all the remains of the plant after it has ripened and discharged its seeds, and evaporating the moisture, which is used for adulterating the purer kind; and the Indian opium is also adulterated by mixing it with cow-dung and other substances, while it is being kneaded.

The best opium is that called Turkey opium, which is produced from poppies cultivated in Turkey and Persia. This kind forms a compact semi-transparent substance, which is brittle, and easily broken when dry, but which is rendered soft and pliable by a gentle heat. The opium made in the East Indies is, on the contrary, soft, and opaque, and some inferior kinds are about the consistence of tar. It is much cheaper than the Turkey opium, and not above half the strength.

Opium is used medicinally, to allay pain and procure sleep; but it is also taken as an intoxicating drug. It was known to the ancients, its medical properties having been described by Dioscorides, who mentions also, that too large a dose will kill. Galen ranked it among his cold medicines. At the present day it is principally used in Turkey, where, as the Mussulman religion forbids wine, it is taken solely for its intoxicating properties. In Turkey it is frequently mixed with rich syrup or candied fruit, and made into lozenges, which are stamped with the words *Mash Allah*, literally, "the work of God." In this state it is taken by women, and even children; but never without producing a most injurious effect upon the constitution. The Turkish men generally take it raw; and there are certain coffee-houses in Constantinople set apart for those who have habituated themselves to the use of this drug. In these places, stupid, heavy-looking men may be seen sitting on a bench, waiting for the effects it will produce. The time which elapses between the taking of the opium and its effects, varies from about twenty minutes to two hours, and as soon as it begins to operate, these stupid, heavy-looking

beings become animated with the wildest passions. Madden, in his *Travels in Turkey*, speaking of them, says, "Their gestures were frightful; those who were completely under the influence of the opium talked incoherently; their features were flushed; their eyes had an unnatural brilliancy; and the general expression of their countenances was horribly wild." This violent excitement soon wears off, but the exhilarating effects of the opium remain for four or five hours, after which they return to their coffee-house for another dose. The horrible effects produced by this constant use of opium have been frequently described by travellers. "The debility," says Mr. Madden, "both moral and physical, attendant on its excitement, is terrible; the appetite is soon destroyed, and every fibre in the body trembles; the nerves of the neck become affected, and the muscles get rigid: several I have seen in this place who have wry necks and contracted fingers, but still they cannot abandon the custom. They are miserable till the hour arrives for taking their daily dose." The quantity of raw opium taken by the Turks is almost incredible:—one man, from constantly increasing his dose, has been known to take a hundred grains of opium a-day; though four or five grains are sufficient to kill a person not accustomed to it.

In England, where opium is principally used for medicine, it is generally taken in the form of laudanum or morphine. Laudanum is made by steeping the raw opium in spirits of wine, or white brandy; and it is from the addition of the alcohol still more exciting than the drug alone. Morphine is the narcotic principle of the opium, and it possesses the sedative properties of that drug without its exciting ones. The possibility of decomposing the opium so as to separate its narcotic principle from its intoxicating ones, was discovered by an eminent German chemist, M. Sertürner, in 1817; and the morphia thus separated has since been in general use in medicine. The commonest preparation of it is called acetate of morphine, and one grain of it is equal to about three grains of laudanum. Too large a dose would produce death by stopping all the secretions. The Turkish opium is considered the best for making morphine, as it is found to contain three times more of that principle in any given quantity than the opium of India.

The oil of poppies is made from the seeds, which, as we have before remarked, do not contain any narcotic properties; and the growing of poppies for the purpose of making oil from their seeds, forms a regular article of field culture in France and the Netherlands. The ground chosen for the culture of the poppies destined for this purpose, should be rich (as is required for all oil plants) and yet light; as the poppy has a long tap root, and grows best in soils which it can penetrate to a great depth. The seeds are sown in rows, in the south of France in September or October, but in the northern French provinces, and in the Netherlands, they are not sown till February or March. In dry seasons the plants are watered; and, at all events, they are frequently weeded, and the earth hoed up to them.

When the capsules begin to harden, and the little valves under the stigmas to open, the season of the harvest is arrived; and the proprietor repairs to his field, followed by his wife, children, servants, and in short every one belonging to his farm, to gather the seeds. For this purpose they take table-cloths and sheets, which they spread out between the lines of poppies as well as the space will admit, several persons holding the cloth at each end. Then a person goes on the other side of the line of poppies and bends each head so that the seeds it contains may fall into the cloth. This is done with great rapidity, and as soon as the poppies growing opposite one length of cloth have discharged their seeds, the cloth is shifted to another length; and each cloth as it is filled is tied up for carrying away the seeds. Great care is taken not to suffer any broken part of the capsules to

fall in with the seeds, as, if any such matter were taken to the mill, it would absorb and waste the oil. When all the seeds have been gathered that will fall out of the poppy-heads by bending them, the heads are cut off, with a portion of stalk to each, with a reaping-hook; and every handful as it is gathered is shaken over a table-cloth spread on the ground, in case any seeds should remain in it. These heads tied up in bundles are afterwards hung up in the granary with a cloth under them, that the unripe seeds may become dry and drop upon it; but these seeds are very inferior to those of the first harvest.

When all the seeds are gathered, they are taken to some convenient place, where they are spread out on linen for several days to dry, being frequently removed. They are afterwards put into sacks, each standing separately, and removed several times from one sack to another for about a fortnight, till they are sufficiently dry for taking to the mill. This mill is constructed something like the cider mills of England, and the seeds are ground in it by a cylindrical wheel which moves round in a kind of trough, passing over the seeds, and crushing them as it rolls along. The trough has one or two little spouts descending from it, through which the oil runs as it is expressed from the crushed seeds, into vessels placed to receive it. When the seeds are reduced to a mass, or what is called the marc, it is wrapped in clean hair cloths, and taken to the press, where as much oil as possible is obtained from it. The marc is then taken to another place, where it is plunged in boiling water, when the oil remaining in it rises to the surface, and is skimmed off. This last kind of oil is, however, considered very inferior to that which flows from the seeds when they are being ground, or pressed.

The oil thus obtained is used extensively on the continent for mixing with olive oil, and it is frequently sold, without any mixture, instead of it. The inferior kind is used in making soap, and for mixing with different kinds of scent by the perfumers. A prejudice existed some time since in France against this oil, from an apprehension that the seeds partook of the narcotic properties of the juice of the plant, and the government issued an edict forbidding any grocers or oilmen to keep oil of poppies, unless it was mixed with spirits of turpentine, so as to render it unfit for human food. The consequence of this injudicious regulation was, that the French farmers could get no sale for their oil of poppies while they called it by its true name; while those who were not so scrupulous, and called it oil of olives, found a ready market. It has been calculated that the olives grown for oil do not yield above a fourth of the oil sold as olive oil in Europe, the remaining quantity being oil of poppies, and purified oils of beech, rape, turnip seed, walnut, &c. Some of these oils are mixed with clarified fresh butter to make them more like olive oil. Of all the substitutes for olive oil, oil of poppies is undoubtedly the best, and by far the least injurious to the stomach. The poppy oil is known by the name of *Huile d'œillets* in commerce.

In Italy, Germany, and Poland, the seeds of poppies are used in confectionary. In Italy, they are made into a kind of sugar-plum, like what we call carraway comfits. In Germany they are boiled in milk, and eaten in this state like sago, which they very much resemble, or made into a kind of open tart. In Poland they make a thick porridge of the meal of buck-wheat, and strew poppy seeds over it. The ancient Greeks used these seeds as an article of food; and the Romans made a kind of cake of them mixed with honey and flour, exactly similar to what is made of them in some parts of France at the present time. They contain a great deal of mucilage, and are not only agreeable to the taste, but very nourishing. The seed of the poppy in England, is principally used for feeding birds, and it is sold in the shops for that purpose under the name of maw-seed. It is used in Germany principally for feeding nightingales; and it forms the principal part of that celebrated composition for singing birds, called German paste.

The poppy heads, or dried capsules, after they have discharged their seeds, are also kept for sale. They are used for fomentations and poultices to allay violent pain. A strong decoction of them mixed with sugar boiled down to a syrup, forms the medicine called syrup of poppies, which was formerly much given to children to soothe them during the pains of teething. It is, however, a very dangerous preparation, as some of the capsules contain more opium than others, from their different degrees of dryness, the soil they are grown in, and a variety of other sources not perceivable by the outward appearance of the heads. Thus one half-a-dozen of heads may contain two or three grains more opium than another half-dozen, and consequently the syrup prepared from the first will be much stronger than the second. There is but too much reason to fear that many children who are supposed to have died in teething, may have fallen a sacrifice to an injudicious use of this medicine. The best poppy heads are obtained from abroad, and they are very much larger than those grown in this country. Poppies are, however, cultivated for their heads at Mitcham, in Surrey. They are sent to market in bags, each containing about 3000. The white-seeded variety is considered in France to be the best to grow for poppy heads. This kind is called by the French farmers the blind poppy, because it has only two or three apertures for the discharge of its seeds, and these are so small as to be scarcely visible. It is also fancied by some to be the best for opium; but both kinds produce that drug, and both are cultivated by the regular opium growers. The poppy heads sold by the druggists as from the Levant, are almost all those of the blind poppy grown in the south of France.

CULTURE.—The poppy requires a very rich and yet light soil to grow it to perfection. When it is wished to have the flowers very fine, a bed should be prepared by trenching it one foot or two feet deep. A layer of cow-dung should be spread along the bottom of the trench, and it should be filled in with the soil taken out, mixed with vegetable mould composed of rotten leaves. The seeds may be sown either in autumn or early in spring, according to the time they are wanted to flower. All the black-seeded varieties are quite hardy; and as they will stand the winter uninjured, they will produce the finest and best flowers if sown in autumn. The seeds of the poppy, like all oily seeds, will not keep well; and though some have been known to vegetate after having been kept in paper three years, yet those of the current year are much to be preferred. When the ground has been properly prepared by digging and manuring, and the surface rendered quite level, the places may be marked for the seeds to be sown. If the plants are to be in patches, circles may be marked by pressing the ground lightly with the bottom of the saucer of a flower-pot of the required size, as directed for sowing the seeds of *Flos Adonis*; but if they are to be in lines, the lines may be marked with a smooth rod laid along the bed, or with a piece of rope. The seeds should then be strewed on the smooth part thus formed, much thicker than was directed for any of the other flowers; as, if the seed is more than a year old, it is probable that not more than one in twenty, or even one in fifty, will come up. As the poppy seed, however, is very fine, it may easily be sown too thick; but this should be guarded against by taking care that the seeds are spread evenly along the line, or over the circle. When the young plants come up, they must be thinned out; and when they are about six or eight inches high, they may be thinned again, so as to leave only the strongest plants; and these should, in rich soils, be a foot or eighteen inches apart; or if the flowers be wished to be very fine, two feet apart, as a strong root will throw up many flower-stems, and abundance of leaves. In poorer soils, the distance between the plants may be less. The plants pulled up in thinning out must be thrown away, as the opium poppy is one of those annuals which will not bear transplanting. As the plants increase in size, the ground should be occasionally loosened about them, and drawn up to the stems with a small hoe. They should also be watered in dry weather. It may appear

useless to bestow so much culture on a flower which, if left to sow itself, will spring up like a weed ; but the difference between the cultivated plant and the self-sown plant, will amply compensate the lover of flowers for the trouble bestowed. Double poppies, treated as we have directed, will produce flowers very nearly as large as those of the *Pæonia Moutan*, and as regularly formed as those of the Persian ranunculus.

2.—PAPAVER RHÆAS, *Lin.* THE CORN POPPY.

ENGRAVINGS.—Eng. Bot. t. 645, 2nd. edit. vol. v. t. 755 ; Curt. Fl. Lond. vol. iii. t. 32 ; Wood's Med. Bot. t. 186 ; and our *fig.* 5, in Plate 4.

SPECIFIC CHARACTER.—Capsules smooth, obovate. Sepals pilose.

Stem many-flowered, scabrous, with spreading bristles. Leaves pin-nate-parted. Lobes elongated, deeply-toothed, acute.—(*G. Don.*)

VARIETIES.—These are very numerous, but the most beautiful are the double white, and the double striped.

DESCRIPTION, &c.—The corn poppy is about one foot or two feet high. The leaves are alternate, long, downy, and deeply cut. The flowers in the single kind are of a brilliant scarlet, and there is a blackish spot at the base of each petal. The double flowers vary from scarlet to pink, and white. The flowers are solitary, and are produced at the extremities of the stem and branches. The capsules are very much smaller than those of the opium poppy ; they are oval, and are crowned with a flat lid, under which are some very small openings, to admit of the discharge of the seeds, which are very small, brown, and almost transparent. This species is a common weed in corn fields, whence it derives its popular name of the corn poppy ; it is also called the corn-rose, red-weed, and by many other names. It is one of the few British plants that have scarlet flowers.

In some places where the farmers are negligent, whole fields may be seen in summer so covered with this weed, as to resemble a carpet of various brilliant colours ; but where this is the case, the poppies are found seriously to injure the corn ; and they are very difficult to eradicate, as one poppy-head contains seeds enough to sow a whole field. The French name for this poppy is *coquelicot*, and it is from its colour in a wild state that the *coquelicot* colour takes its name. The capsules, stem, and leaves of the corn poppy are slightly narcotic, and an extract from them is sometimes used as a sedative, and sold as syrup of poppies. The petals also afford a colouring matter, which is frequently mixed with the syrup made from the opium poppies.

CULTURE.—The garden varieties of the corn poppy are very beautiful, but unfortunately they seldom come true from seed ; so that a happy mixture of their colours must depend on chance rather than the taste or skill of the gardener. As this poppy is of lower growth and less vigorous habit than the opium poppy, it does not require so rich a soil. The seeds not being so full of oil, will keep better than those of the opium poppy, and consequently more are likely to be good in a given quantity. For this reason, they need not be sown so thickly as those of the opium poppy, though they will still require to be sown thicker than those of most other kinds of flowers. Seeds of all the varieties of corn poppy may be purchased in any seed shop. The specimen from which our drawing was made, grew in the Hammersmith nursery, and it is one of the kind called the double dwarf carnation poppy. A bed of these poppies, thinned out so as to leave the plants at regular distances, has a beautiful effect when in flower, and, if the plants are kept dwarf, looks almost as well as a bed of ranunculuses. To keep the plants dwarf, the bed should be thinned out, so as to leave the poppies 18 inches apart, every way ; the bed should be carefully weeded and watered in dry weather ; and any shoot that appears likely to ascend too high should be cut off.

3.—PAPAVER HORRIDUM, *Dec.* THE BRISTLY, OR NEW HOLLAND POPPY.

ENGRAVINGS.—Swt. Brit. Fl. Gard. t. 173, and our *fig. 1*, in plate 4. Stem few-flowered, and covered with stiff bristles. Leaves somewhat stem-clasping, glaucous, sinuately pinnatifid; lobules bristly at the top of the nerves.—(*G. Don.*)

DESCRIPTION, &c.—This is a very remarkable poppy, as its stem and leaves are covered all over with very stiff, strong bristles, which actually wound the fingers when the flower is gathered. The flower is small and of a brick-red; and the leaves, which are deeply cut, are of a bluish green, and have the nerves on their backs and margins covered with bristles. This poppy is a native of New Holland, from which country it was brought in 1825, and it flowered for the first time in the Fulham nursery. It is quite hardy, and only requires sowing in common soil; but it is scarcely worth growing as an ornamental plant, from the smallness of its flowers, and its bristly stem and leaves. It is, however, curious, as being the only poppy which has been found in New Holland. Its flowers, which are very numerous, are produced in July; and as it ripens its seeds freely, it was very abundant for a few years after its introduction. It does not, however, appear to have been much grown, and we do not know where seeds are now to be procured.

4.—PAPAVER SETIGERUM, *Dec.* THE BRISTLE-POINTED, OR GRECIAN POPPY.

ENGRAVINGS.—Swt. Brit. Fl. Gard. t. 172, and our *fig. 2*, in plate 4. Stem smooth, few-flowered. Leaves stem-clasping, glaucous, toothed, each tooth terminated by a bristle. (*G. Don.*)

DESCRIPTION, &c.—As the last species bore considerable resemblance to the corn poppy, so this is nearly allied to the opium poppy. The Grecian poppy has a very elegant flower of a pale violet or lavender colour, with large, rich purple spots at the base of each petal. The stems and leaves are bristly, but neither so much so, nor with such rigid bristles, as those of the New Holland poppy. It was introduced in 1826, by seeds received from Gibraltar, but it is a native of Greece and the Islands of the Archipelago. It is distinguished from *P. somniferum* by the greenness of its leaves, and the long slender bristles with which they are covered, and its much smaller capsules, which have never more than six or eight rays. It is quite hardy, but, like the opium poppy, it requires a rich soil to grow it to perfection. We do not know where seeds are now to be procured, but when first introduced it was grown in Colville's nursery, King's Road, Chelsea.

5.—PAPAVER GARIEPINUM, *Burchell.* THE GARIEP, OR SOUTH AFRICAN POPPY.

ENGRAVING.—Curtis's Bot. Mag. t. 3623. hairy. Stem covered with numerous bristly hairs. Leaves sessile, hispid, sinuately pinnatifid. Lobes ovate and distant.

DESCRIPTION, &c.—This poppy closely resembles *P. horridum* in the shape of its flowers and leaves. It differs, however, in the colour of the flowers, which are of an orange colour, and the shape of the lid of the capsule, which is like that of the roof of a pent-house, with large arch-shaped openings below like windows. The leaves of both this poppy, and that of New Holland, are remarkable for the shortness of their lobes and the distance at which they are apart. The stems and leaves of the African poppy are covered with bristles; but they

are very long and strong, they are neither so sharp nor so rigid as those of *P. horridum*. The South African poppy was found by Mr. Burchell, the celebrated African traveller, on the banks of the Orange River, which is there called the gariep, that is the river, *par eminence*. In its native country this poppy grows to the height of four feet, but in the Glasgow botanic garden, where it flowered for the first time in May 1836, it was not above a foot and a half high. It appeared rather tender, and was kept under a frame. It is probable that in the open air its bristles would be harsher and stronger, and the colour of the flowers darker. We do not think that seeds can be obtained in any of the London seed-shops, but they might be procured from the botanic garden, Glasgow. The poppy, however, does not appear worth cultivating except as a curiosity.

6.—PAPAVER PERSICUM, *Lindl.* THE PERSIAN POPPY.

ENGRAVINGS.—Bot. Reg. t. 1570, and our *fig.* 6, in Plate 4.

SPECIFIC CHARACTER.—Capsule hispid, oval. Sepals hairy. Leaves | pinnatifid, hairy, the lacinated part often terminating in bristles.
Stems branched and leafy.—(*Lindl.*)

DESCRIPTION, &c.—This very elegant poppy was sent from Persia to Berlin, and from the botanic garden of that city it was sent to the Horticultural Society of London, where it flowered for the first time in 1833. Seeds may be procured from the garden of the London Horticultural Society by the members, and they may be purchased at the seed-shop of Mr. Charlwood, Covent Garden. The flower is very pretty, and it would be highly deserving of cultivation if the petals did not fall so soon after expanding. In a botanical point of view it is interesting, as, from the shape and construction of its capsule, it forms a connecting link between the poppies and the genus *Argemone*, of which we shall speak in a future page.

7.—PAPAVER NUDICALE, *Lin.* THE NAKED-STEMMED POPPY.

ENGRAVINGS.—Bot. Mag. t. 1633; Eng. Bot. 2nd edit. vol. v. t. 753*, and our *fig.* 3, in Plate 4.

SPECIFIC CHARACTER.—Capsules hispid, obovate-oblong. Sepals | beset with bristles. Peduncles radical, very long. Leaves pinnately lobed. Lobes toothed or cut, acute.—(*Lin.*)

DESCRIPTION, &c.—This poppy is, properly speaking, a perennial; but it may be grown as an annual, by treating it in the same manner as will be hereinafter directed for the *Hunnemannia*. The naked-stemmed poppy is a native of Siberia, but it is also found in North America, and it has been discovered in one place in Ireland. There are two or three varieties, one of which has yellow flowers, another white, and another purple. Seeds are to be bought in any seed-shop. When the plant is well grown, the flowers are nearly twice as large as that shown in plate 4, and they are worth cultivating on account of their colour, as yellow contrasts well with scarlet, which is the general colour of the corn poppy, and all its varieties and allied species.

OTHER KINDS OF POPPY.

Though perhaps none of the following kinds are worth growing as ornamental flowers, we shall enumerate them, as they are found in the lists of annual poppies contained in botanical works. We do not think that their seeds can be purchased at the seed-shops, but they can generally be procured at botanic gardens, and many of the plants are natives of Great Britain.

8.—*P. HYBRIDUM*, *Lin.*

The flowers are small and scarlet, each petal having a dark spot at the base. It grows about a foot high, and is a native of England, in corn-fields where the soil is chalky, in the southern counties. The capsule is covered with bristles, and it is from this circumstance that this species takes its popular name of the rough-headed poppy. The petals are wrinkled, and soon drop.

9.—*P. ARGEMONE*, *Lin.*

This species is found wild in corn-fields in England, in a sandy or gravelly soil. The petals, which are smooth and long, are of a pale scarlet, with a small black spot at the base of each. The capsules are long, and have a kind of crown of bristles at their summit; and it is from this peculiarity that this species is called the prickly long-headed poppy.

10.—*P. DUBIUM*, *Lin.*

A native of sandy fields in England, and other parts of Europe. The flowers are large and handsome, though not so much so as those of *Papaver Rhæas*. The flower-stalks are covered with soft silky hairs, but the capsule is smooth; and hence its popular name of the smooth, long-headed poppy. There is a variety with white flowers.

11.—*P. OBTUSIFOLIUM*, *Desf.*

This species has small flowers with rose-coloured petals, and is a native of the north of Africa. It was introduced in 1828.

12.—*P. TRILOBUM*, *Spreng.*

A native of Halle, resembling *P. Rhæas*, but with smaller flowers. Introduced in 1827.

13.—*P. LÆVIGATUM*, *Bieb.*

A native of the hills near Odessa, and about Caucasus. The flowers resemble those of *P. dubium*. Introduced in 1823.

14.—*P. ROUBIÆI*, *Vig.*

A native of sandy places near Montpellier. Resembling the corn poppy, but with flowers of a paler red. It was introduced in 1823.

15.—*P. ARENARIUM*, *Bieb.*

A native of sandy fields in the Caucasus. The flower is red, with a dark centre. Introduced in 1828.

16.—*P. FLORIBUNDUM*, *Desf.*

A branching, very free-growing species. The leaves are glaucous, and covered with hairs. The flowers are very large and handsome, and from their great abundance the plant makes a splendid appearance. Their colour is an orange red, with a yellowish circle at the base of each petal. The plant is a native of Armenia, whence it was introduced in 1815. It is well deserving of cultivation, but we do not know where seeds are now to be purchased in England, though they might easily be procured from the Botanic garden, Moscow.



1. *Ranunculus hybridus*. 2. *Glaucium luteum*. 3. *Glaucium Phoeniceum*.
 4. *Argemone Mexicana alba flora*. 5. *Argemone Mexicana*.

GENUS II.

ARGEMONE, *Tour.* THE PRICKLY POPPY.

Lin. Syst. POLYANDRIA MONOGYNIA.

GENERIC CHARACTER.—Petals 4—6. Stamens indefinite. Style almost wanting. Stigmas 4—5, radiating, concave, free. Capsule obovato, prickly, 4—5-valved.—(*D. Don.*)

DESCRIPTION, &c.—The different kinds of *Argemone* have all flowers resembling in shape the single corn poppy, but varying in colour from bright yellow to pure white. The leaves are wrinkled, and they are curved up at their margins like those of the holly, and armed with numerous sharp prickles. The capsule, which is also armed with prickles, is in four or five valves; and the points of the stigmas, instead of being bound down like cords over the lid of the capsule, form a kind of cross at the top. The stem when broken exudes a yellow juice, resembling that of the poppy in thickness though not in colour. There are three species in British gardens.

1.—ARGEMONE MEXICANA, *Lin.* THE MEXICAN, OR COMMON PRICKLY POPPY.

ENGRAVING.—Bot. Mag. t. 243, and our *fig.* 5, in Plate 5.

SPECIFIC CHARACTER.—Leaves profoundly repand-sinuated, spiny, blotched with white; flowers solitary; calyx smooth; capsules

prickly, 3—4-valved; petals 4—6; stigmas 4—5.—(*G. Don.*)

VARIETY.—A. M. 2 albiflora, *Dec.* Leaves sessile, feather-nerved; flowers white. See *fig.* 4, Plate 4.

DESCRIPTION, HISTORY, &c.—The common prickly poppy grows about two feet high, with strong, vigorous, and erect stems. The leaves are large, deeply cut, and prickly; and they are of a bluish green, blotched, or rather painted with white, up the mid-rib and principal veins. The flowers are of a bright yellow, and are about the size and shape of those of the corn poppy. The capsules are oblong, and armed with strong prickles. The white-flowered variety, *fig.* 4, which is by many botanists considered a distinct species, differs not only in the colour of the flowers, but in the leaves being much narrower, and not blotched with white.

This species is a native of Mexico, where it was found by the Spaniards on their first invasion of that country, and called by them Figo del Inferno, the devil's fig, from the shape of the capsule somewhat resembling that of a fig, and its being armed with strong spines. It is also found in the West Indies, where it is called the golden thistle of Peru. It was brought to England in 1590, and is mentioned by Gerard among the plants cultivated in his garden. The prickly poppy is used in medicine. Its yellow juice, when reduced to the consistence of a gum, can scarcely be distinguished from gamboge, and is applied to the same uses. It is also considered an excellent medicine for the eyes, and is supposed to form the principal ingredient in Singleton's Golden Ointment. The seeds are a powerful narcotic, and an oil is expressed from them which is used in Mexico, not only by painters, but for polishing wood. The culture is very simple, as the seeds will only require to be sown in the open flower border about the end of March or the beginning of April, the plants, though natives of a warm country, being quite hardy. Seeds are to be obtained in every seed-shop.

2.—ARGEMONE OCHROLEUCA, *Stw.* THE CREAM-COLOURED PRICKLY POPPY.

ENGRAVING.—Brit. Fl. Gard. t. 242.

SPECIFIC CHARACTER.—Leaves profoundly sinuated or pinnatifid, glaucous; nerves with prickly bristles; flowers solitary; stamens	few; capsules oblong, deeply 5—6-furrowed, covered with somewhat reflexed prickles; stigmas 5—6, distinct, spreading, purple.—(<i>G. Don.</i>)
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DESCRIPTION, HISTORY, &c.—This species differs from the common kind in having large cream-coloured flowers, a prickly stem, and narrower leaves, which, instead of being blotched with white, are only marked with a paler green. The valves of the capsule are also more deeply marked. The plant grows from two feet to four feet high; and from the vigour of its growth and the large size of its flowers, it is very ornamental. It was introduced from Mexico in 1827, by the late Mr. Barclay, of Bury Hill; and as it seeds abundantly, it is common in the nurseries and seed-shops. It may be sown in the open border in April or May, when it will come into blossom in August, and will continue flowering till October; but if treated as a tender annual, as will be directed in a future page for *Hunnemania*, it will come into blossom much sooner, and will produce finer flowers. The seeds are brown, glossy, rugged, and winged on the side that they are attached to the capsule.

3.—ARGEMONE GRANDIFLORA, *Swt.* THE LARGE-FLOWERED PRICKLY POPPY.

ENGRAVINGS.—Brit. Fl. Gard. t. 226.

SPECIFIC CHARACTER.—Leaves sinuated, smooth, spiny-toothed.	Nerves unarmed. Flowers panicle, polyandrous. Calyx smooth. Capsules bluntly quadrangular, almost unarmed.—(<i>G. Don.</i>)
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DESCRIPTION, &c.—This is by far the handsomest of the genus. The flowers are of a pure white, and very large, being frequently above four inches across when fully expanded; they are also produced in clusters, which gives the plant a splendid appearance when in flower. The stem, which is brown, tinged with purple, is smooth, strong, and branching, and the plant generally grows about four feet high. The leaves are large, not blotched, and only spiny at the margins. This very handsome plant is, properly speaking, a perennial, but if sown in autumn, and treated as we shall direct for the *Hunnemania*, it may be planted out in May, and will form a most splendid object all summer. It is a native of Mexico, and seeds of it were sent to Mr. Barclay from that country, at the same time that he received the seeds of *Argemone ochroleuca*. The seeds of both species were sowed in spring on a hot-bed, and *Argemone grandiflora* flowered at Bury Hill the following October. Seeds may now be procured in most of the London seed-shops.

GENUS III.

GLAUCIUM, *Tourn.* THE HORNED POPPY.*Lin. Syst.* POLYANDRIA MONOGYNIA.

GENERIC CHARACTER.—Petals four. Stamens indefinite. Stigma bilamellate. Capsules elongated, two-valved and two-celled from the cellular dissepiment. Seed without a glandular crest.—(*G. Don.*)

DESCRIPTION, &c.—These very curious plants have large showy flowers and remarkably long horn-like pods, whence the English name of horned poppy. They are natives of the sea-coast, and the leaves are of the

same peculiar bluish green as the sea which washes the British cliffs. They abound in a copper-coloured acrid juice, which is poisonous, and is said to occasion madness.

1.—GLAUCIUM LUTEUM, *Smith*. THE YELLOW HORNED POPPY.

ENGRAVINGS.—Eng. Bot. t. 8; 2nd edit. vol. v. t. 748; and our fig. 2 in Plate 5.

SYNONYMES.—*Chelidonium Glaucium*. *Lin.* *Glaucium flavum*.

Crantz. *G. glaucum*. *Mench.* *G. littorale*. *Sal.*

SPECIFIC CHARACTER.—Stem glabrous. Stem-leaves repand. Capsules scabrous, with tubercles.—(*G. Don.*)

DESCRIPTION, &c.—Every one who has travelled from Brighton to Shoreham must have been struck with the splendid flowers of the yellow horned poppy, which grows on the cliffs almost into the sea, and the leaves of which look, as Dr. Lindley remarks, as though they were encrusted with the salt spray. The horned poppy, in favourable situations, forms a large plant from two feet to three feet high, and spreading widely in proportion. The flowers are very large, and of a most brilliant golden yellow; and though they do not last long, they are produced in such abundance that there is a constant succession of them. When the petals fall they are succeeded by immensely long pods, which stick out like horns, and which are, in fact, elongated capsules. These horn-like pods, which are often above a foot in length, consist each of two valves, and contain the seeds arranged along the sides like peas in their shells. The leaves and calyx are both rough and prickly; and the leaves, which are of a very bluish green, are covered with a kind of glaucous bloom, which makes them look as though they were powdered, or covered over with very fine salt.

The CULTURE of the horned poppy requires very little care. It will grow in any common garden soil, but it prefers sand, as it is always on sandy shores that it is found. Its root is very long, so that it should have a soil sufficiently loose to enable it to penetrate it. It will not bear transplanting, and consequently, when the seeds are sown, it should be sparingly, as the plants will require to be at a considerable distance from each other to look well when in flower, and those that are taken up in thinning must be thrown away. As the plants ripen abundance of seeds, they are quite common, and to be procured at every seed-shop. The specimen figured in our plate is much less than the ordinary size of the flower.

2.—GLAUCIUM PHŒNICEUM, *Smith*. THE SCARLET HORNED POPPY.

ENGRAVINGS.—Eng. Bot. t. 1433; 2nd edit. v. t. 749; and our fig. 3, in Plate 5.

SYNONYMES.—*Chelidonium corniculatum*. *Lin.* *C. Phœniceum*. *Lam.* *C. aurantiacum*. *Sal.* *Glaucium corniculatum*, *var. phœui-*

cium. *Dec.*

SPECIFIC CHARACTER.—Stem pilose. Stem-leaves pinnatifid. Capsules setose.—(*G. Don.*)

DESCRIPTION, &c.—A pretty little flower with bright scarlet oblong petals, each of which has a black spot at its base. It closely resembles the yellow horned poppy both in its habits and culture, but it is a much smaller plant. It is a native of the south of Europe, but it has been found wild in the Isle of Portland and in the county of Norfolk, in sandy places. Its culture is the same as that of the yellow horned poppy, and seeds of it may be procured at any seed-shop.

There is a variety of this species with yellow flowers; and another species called *G. tricolor*, which closely resembles it. Both are said to have been introduced into England, but we have never seen either of them, and do not know where they are to be procured.

GENUS IV.

RŒMERIA, *Medik.* THE RŒMERIA.*Lin. Syst.* POLYANDRIA MONOGYNIA.GENERIC CHARACTER.—Petals four. Stamens indefinite. Stigma one. Capsules elongated, 3—4-valved, 1-celled.—(*G. Don.*)1.—RŒMERIA HYBRIDA, *Dec.* THE HYBRID RŒMERIA, OR, PURPLE HORNED POPPY.ENGRAVINGS.—Eng. Bot. t. 201; 2nd edit. v. t. 750; and our *fig.* | *G. violaceum*, *Juss.*; *Chelidonium hybridum*, *Lin.*; *C. violaceum*,
1, in Plate 5. | *Lam.*; *Rœmeria violacea*, *Medik.*SYNONYMES.—*Glaucium hybridum*, *Dum.*; *G. trivalve*, *Mench.*; | SPECIFIC CHARACTER.—Siliques 3—4-valved, erect, beset with stiff
bristles at the top.—(*G. Don.*)

DESCRIPTION, &c.—This is a very beautiful flower, and would be well deserving of cultivation, were not the flowers so very short-lived. They not only do not last more than a day, but it is difficult to find a flower with all its four petals on at once. One or two drop almost as soon as the flower expands. We had great difficulty in getting a perfect flower for our engraving to be made from, and at last, could only accomplish it by gathering the bud, and letting it expand in water. It is a native of the South of Europe, and North of Africa, in corn-fields and vineyards; and it is also occasionally found wild in England, in Norfolk and Cambridgeshire. Its culture is the same as that of the horned poppy, and its seeds are to be procured at every seed-shop. It is frequently called *Glaucium violaceum* in the seed-shops, that being the name Linnæus gave to the species. It was divided from *Glaucium*, and formed into a new genus, called *Rœmeria*, because its capsule was found to have three or four valves, and one cell, whereas the capsules of all the other *Glauciums* have two valves and two cells. The stigma is also entire in the *Rœmeria*, and cleft in the *Glaucium*, and the seeds are somewhat different.

GENUS V.

PLATYSTIGMA, *Benth.* THE PLATYSTIGMA.*Lin. Syst.* POLYANDRIA TRIGYNIA.

GENERIC CHARACTER.—Sepals 3, ovate, deciduous, hairy. Petals | Capsule oblong, attenuated at the base, 1-celled, 3-furrowed, 3-valved,
4—5. Stamens numerous. Filaments thread-like. Anthers linear, | opening from the top to the base. Seeds numerous, minute, egg-
2-celled, opening sideways. Stigmas 3, ovate, acute, erect-divergent. | shaped, black, smooth, shining.—(*Benth.*)

1.—PLATYSTIGMA LINEARE, *Benth.*

ENGRAVINGS.—Bot. Reg. t. 1954; Bot. Mag. t. 3575; and our *fig.* | densely covered with leaves. Leaves linear, entire, stem-elasping, 1-
3, in Plate 6. | nerved. Peduncles six inches long, erect, 1-flowered, slightly hairy.
SPECIFIC CHARACTER.—Plant small, tufted. Stems very short, and | —(*Benth.*)

DESCRIPTION, &c.—This pretty little plant has slender and delicate stems rising out of a dense mass of leaves. The flowers consist of three outer petals, which are broad and yellow, and three inner ones, which are narrow



1. *Eschscholzia californica*. 2. *Eschscholzia crocea*. 3. *Platystegma lineare*.

and white. The calyx consists of three sepals, which generally fall off as soon as the flower begins to expand, but which sometimes wither, and yet remain on. The buds hang drooping, but the flower becomes erect before its expansion. The flower stems are very long, and covered with hairs, and a great number spring from one root. The plant takes its name from the breadth of its stigma, which divides into three at its extremity. The plant was first described in 1835, by Mr. Bentham, in the *Horticultural Society's Transactions*, vol. i. 2nd Series, from dried specimens, sent home from California by Douglas, but no seeds were then received.

In 1836 seeds were sent from St. Petersburg to the Glasgow Botanic Garden, where some plants flowered in the open garden in August and September of that year. The plant thus proves to be quite hardy, and it may be sown in the flower borders, as directed for the Flos Adonis. We do not think seeds are as yet common in the seed-shops, but they may be had at Mr. Charlwood's, or from any botanic garden.

GENUS VI.

ESCHSCHOLTZIA, *Cham.* THE ESCHSCHOLTZIA, OR CALIFORNIAN POPPY.

Lin. Syst. Icosandria? Polyandria? Trigynia.

<p>GENERIC CHARACTER.—Petals 4. Stamens indefinite. Stigmas 4, 2 short and 2 long. Capsules elongated, silique-formed, 2-valved, 1-celled. Calyx calyptrate. Receptacle expanded.—(<i>G. Don.</i>)</p>	<p>Showy flowers, which though they will occasionally last several years as perennials, are generally grown as annuals, and which are great favourites in the flower-garden.</p>
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1.—ESCHSCHOLTZIA CALIFORNICA, *Cham.* THE COMMON ESCHSCHOLTZIA, OR CALIFORNIAN POPPY.

<p>ENGRAVINGS.—Bot. Reg. t. 1168; Bot. Mag. t. 2887; Swt. Brit. Flow. Gard. t. 265; and our <i>fig. 1</i>, in Plate 6.</p> <p>SYNONYME.—<i>Chryseis californica</i>.—<i>Lindl.</i></p>	<p>SPECIFIC CHARACTER.—Stigmas 4, two larger than the others. Seeds globose, almost black.—(<i>G. Don.</i>)</p>
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DESCRIPTION, &c.—The common *Eschscholtzia* is a splendid golden yellow flower, with glaucous-green finely-cut foliage, and long horn-like pods. The calyx is entire; and instead of opening at the side to permit of the expansion of the flower, it detaches itself at the base, and gradually rises till at last the swelling flower fairly pushes it off, leaving a fleshy disk below. The *Eschscholtzia* was first discovered by our highly esteemed friend Archibald Menzies, Esq., who accompanied the expedition under Vancouver, and who discovered it in Monte Rey Bay, in California, in the autumn of 1792. He brought specimens to this country, from some seeds in which plants were raised at Kew, but they do not appear to have ripened seed, and the species was soon lost. It was afterwards again discovered in Captain Kotzebue's expedition, by Chamisso, who named it in compliment to his fellow traveller Dr. Eschscholtz, and described and figured it in his work, entitled *Horæ Physicæ*. It remained, however, for Douglas, to whom we owe so many new and valuable plants, to introduce it into general culture, and by him seeds were sent to England in 1826, since which time it has been a general favourite in our flower-

gardens. In 1837, Dr. Lindley, when describing a new species, *Eschscholtzia compacta*, in the *Botanical Register*, inserted a note from a botanical friend, in which it was proposed to change the name of the genus to *Chryseis*, under the supposition that the name of Eschscholtz was the same as that of Elsholtz, after whom another plant had been named. As however it has since been proved by M. Otto, of Berlin, that the names are quite distinct, that of *Eschscholtzia* will, we suppose, be retained. (See *Allgemeine Garten Zeitung*, vol. v. p. 221.)

In its native country this plant grows on the sandy banks of running streams, and this may give a hint for its culture. It will, however, grow in any soil, and may either be treated as a hardy or as a tender annual, the advantage of the latter mode being that it will come into flower much sooner, and consequently its season of flowering will be prolonged. Seeds are abundant in all the seed-shops. The specimens that our figures of this, and the following species, were drawn from, were from His Grace the Duke of Bedford's villa at Camden Hill.

2.—ESCHSCHOLTZIA CROCEA, *Benth.* THE SAFFRON-COLOURED ESCHSCHOLTZIA.

ENGRAVINGS.—Bot. Reg. t. 1677; Swt. Brit. Flow. Gard. 2d. Ser. t. 299; and our fig. 2 in Plate 6.

SYNONYME.—*Chryseis crocea*.—*Lindl.*

SPECIFIC CHARACTER.—Stem branching and leafy. Segments of the leaves linear; peduncle with a funnel-shaped appendage; limb much dilated. Calyx long and acuminate.—(*G. Don.*)

DESCRIPTION, &c.—In general habit and appearance this species strongly resembles the last; but the colour of the flower, instead of being yellow, is orange. It is quite hardy, and a most abundant flowerer. It was introduced in 1833 by Douglas, and it seeds so abundantly that it is now common everywhere. There is a double variety, which is very beautiful, and which was shown at one of the London Horticultural Society's Exhibitions, in 1837. The principal difference between this species and *E. Californica*, consists in an enlargement of the fleshy disk below the flower, which remains on after the petals have dropped; and in the calyx being longer and more pointed. The fleshy disk shown to the seed-pod of *E. Californica*, in plate 6, is much too small; and that of *E. Crocea* is nearly four times as large.

3.—ESCHSCHOLTZIA COMPACTA. THE DWARF ESCHSCHOLTZIA.

ENGRAVING.—Bot. Reg. t. 1948.

SYNONYME.—*Chryseis compacta*.—*Lindl.*

SPECIFIC CHARACTER.—Stem dwarf, densely branched. Segments

of the leaves linear, wedge shaped, tridentate at the apex. Cup of the peduncle funnel-shaped, with its large limb nearly flat.—(*Lindl.*)

DESCRIPTION, &c.—This plant only differs from *Eschscholtzia Californica* in its much more dwarf and compact habits, in the segments of its leaves being very slightly toothed instead of deeply lobed, and in its flowers being much smaller. The seeds of this species were sent home by Douglas in 1835. Dr. Lindley suggests, that the three kinds of *Eschscholtzia* may be only varieties of one species, as the differences are very slight between them. All of them thrive best when the seed is sown in March in pots placed in a hotbed. When the young plants are removed to the open border, they should be taken out of their pots and planted, without breaking the cake of earth round their roots. They will not bear any after transplanting, as the root is "very fleshy and brittle, and bleeds copiously when broken."—(See *Bot. Reg.* t. 1158.) *Eschscholtzia compacta* flowered first in 1835 in the Horticultural Society's Garden at Turnham Green; but it is now in several nurseries, and in the autumn of 1838 was in great abundance in the nursery of Mr. Rogers, in Eaton Square, Pimlico.

GENUS VII.

HUNNEMANIA, *Swt.* THE HUNNEMANIA.

Lin. Syst. POLYANDRIA MONOGYNIA.

GENERIC CHARACTER.—Petals four. Stamens indefinite. Stigma peltate, four-furrowed, slightly four-lobed. Capsules silique-formed, rather compressed, ten-ribbed, one-celled, two-valved.—(*G. Don.*) There is only one species.

1.—HUNNEMANIA FUMARIÆFOLIA, *Swt.* THE FUMITORY-LEAVED HUNNEMANIA.

ENGRAVINGS.—*Bot. Mag.* t. 3016; *Lodd. Bot. Cab.* t. 1779; *Brit. Flow. Gard.* t. 276.

SPECIFIC CHARACTER.—Leaves decomposed and triternate; glaucous. Leaflets linear, bluntish.—(*G. Don.*)

DESCRIPTION, HISTORY, &c.—The Hunnemanian may be treated either as a shrubby, or suffruticose plant, as a perennial, or as an annual; and as it will flower beautifully according to the latter mode of treatment, we have included it in our list. The foliage of the Hunnemanian bears a considerable resemblance to that of the *Eschscholtzia*, but it is more stiff, and upright; it is also of a darker bluish green. The flower is large, resembling in shape a single poppy, and of a most brilliant yellow. The capsule is a pod, and resembles that of the *Eschscholtzia*. The stem, which grows about three feet high, is erect and branching, bearing a solitary flower at the extremity of each branch. It is a native of Mexico, and was introduced in 1827, by the late Robert Barclay, Esq. of Bury Hill, to whom the Floricultural world is indebted for so many valuable plants.

CULTURE.—The Hunnemanian like the *Eschscholtzia* belongs to a class of plants for which we want a definite name. It may be treated as an annual, and suffered to die after it has flowered and ripened its seeds; but if protected during winter, it will live three or four years, flowering every summer; and if trained against a wall, and carefully protected from frost, it will live several years, and will soon become woody at the lower part of the stem near the root. The *Calandrinias*, and other Californian and Mexican plants, are of the same habit; but as they are all generally sold in the seed-shops as annuals, and bear splendid flowers, we have included them in this work.

Though the Hunnemanian continues in blossom nearly the whole summer, and is certainly one of the most splendid flowers that can be grown in the open ground, it is comparatively but seldom found in flower-gardens. This arises principally from its being considered as a perennial, and consequently, as difficult to keep through the winter. After it is planted out, it rapidly becomes a large plant, and, of course, very troublesome to protect; but if it is treated as an annual, that is, raised from seed every year, and suffered to die as soon as it has flowered and ripened its seed, it only requires protection in a cold frame the winter after it is sown, when, of course, the plants are quite small, and a great many may be kept in one pot. As this is the first tender annual we have treated of, we shall give a detailed account of its culture, as a similar mode of treatment will be suitable to several other plants; and we shall first say a few words on the general treatment of tender annuals raised in pots on a hot-bed.

All tender annuals, to be flowered in the highest degree of perfection, must be raised on a hot-bed; and

therefore, before giving any directions respecting sowing these plants, we shall say a few words on the manner of making a hot-bed suitable for raising them.

TO FORM A HOT-BED.—A hot-bed is a mass of any fermenting material, that in its decomposition produces a degree of heat considerably above that of the atmosphere in which it is placed. There are various matters which will answer for this purpose ; some animal, others vegetable, and some even mineral, as for example, certain kinds of coal dross, containing pyrites. For gardening purposes, however, the material in general use, not only in Britain, but on the Continent of Europe, and in North America, is stable manure. This may be used either alone, or mixed with the dung of cows, pigs, or poultry ; or with leaves, grass, straw, or any other readily-decomposed vegetable substance ; or with animal matters, such as hairs, the parings of leather, horn shavings, feathers, &c. The sweepings of streets, as they generally contain a great variety of vegetable and animal matters, used either alone, or mixed with stable manure, will form a very durable hot-bed. In the nursery of Messrs. Wilmot, of Lewisham, the sweepings of the streets of the Borough, and of Greenwich, have been used alone for many years, as the fermenting material on which melons are grown ; this manure being found to produce a more equable heat, and that for a greater length of time, than any other material hitherto tried. Spent tanners' bark, such as is used for growing pines, also forms a very excellent hot-bed, either used alone, or mixed with some of the other substances mentioned. Fallen leaves, swept together in autumn, and laid in heaps under cover, will ferment with or without other materials, and will make a very durable hot-bed ; and the sprays of trees cut off in the summer time, with the leaves on, such as the clippings of hedges, will also be a material that may be used with great advantage, along with autumnal leaves, or tan. The same may be said of weeds, the refuse of vegetables, pea haulm, short grass, &c.

A general idea may thus be formed by the inexperienced reader, of the materials which may be used in making hot-beds ; but as the most common, and that which is generally most easily within the means of the amateur who has but a small garden, is stable manure, we shall confine ourselves to giving directions for the management of that material. When obtained from the stables in, say a cart-load, which is quite sufficient for a small hot-bed large enough for rearing annuals, it consists of two parts, the dung of the horse, and long litter, or in other words, straw, moistened and discoloured, but not decayed. When the mass, thus formed, is laid in a heap, it generally produces a very powerful heat, too strong for being used as a hot-bed ; for it should never be forgotten that too hot a bed is worse for the plants than sowing them in the open air. If the bed be much too hot, the plants will be blackened, and ultimately destroyed ; and even if only a little hotter than is necessary, the plants will be drawn up, and become too weak to have any chance of success when afterwards transplanted into the open air. As it is the fermentation occasioned by the decomposition of the straw contained in the manure which produces the violent heat, the heap should be turned over with a dung-fork two or three times in the course of a fortnight, till the decomposition is considerably advanced, the whole mass of one colour, and the straws, which were before tough, rendered sufficiently tender to be easily torn to pieces with the dung-fork. When the mass is arrived at this stage, it may then be formed into a bed, which may be of any convenient length and breadth, according to the situation and other circumstances.

In general, such a bed is covered with what is called a hot-bed frame. This consists of a box without a bottom, and with a moveable top, formed of a glazed sash or sashes. For a small garden, a box three feet wide, and four feet from the back to the front, will be sufficient. The back of the box may be two feet high, and the

front one foot. The hot-bed may be formed in an open situation, on a surface raised six inches above the general level; and it should be three or four inches wider on every side than the box that is to be placed on it. The cart-load of manure, which has been fermented and prepared for making up this hot-bed, should now be regularly spread over the base of the intended bed, and raised by successive layers to such a height as the quantity of manure will admit. If, in building the bed by these successive layers of manure, cinder siftings, and the animal and vegetable refuse of the kitchen, are mixed along with it, the heat will be the less violent at first, but it will be retained for a much greater length of time; and if a part of the contents of a cess-pool of the water-closets of the house could be added to the ashes and vegetable refuse, the heat would probably be maintained during the whole summer; and a good crop of melons might be obtained after the seedling annuals were removed.

The time for making a hot-bed for raising seedling annuals need not be earlier than the middle of March, since the plants which are raised in it cannot in general be turned out into the open air sooner than the middle of May. As soon as the manure is formed into a bed, and the upper surface rendered quite level, the frame and the sash should be set on it. In two days the disturbed fermentation will have recommenced, and a steam will be observed under the glass. The surface of the bed may now be covered three or four inches deep with any light garden soil, and the different kinds of seeds may be sown in pots and placed on its surface; or if there should not be much heat, or likely not to be much, the pots may be sunk into the manure. In other cases, where it is not thought necessary to sow the different kinds in pots, the covering of soil may be six or eight inches deep, and the seeds may be sown on it, in little square or round patches. This indeed is the common practice.

In such a hot-bed as we have described, formed of only one load of stable manure, there is very little danger of over-heating the soil; but it may be proper to observe, that neither the temperature of the soil, nor the atmosphere over it, should ever much exceed 60 degrees. It may fall as low as 48 degrees, or even 40 degrees, without the slightest injury to the plants; and it may be raised as high as 80 degrees, or even 90 degrees, without killing them; but any degree above 60 degrees is decidedly injurious, by increasing the rapidity of the growth of the plants, and rendering them weak and sickly, and unfit to be turned out into the open ground.

When the plants have come up, and shown two or three leaves, in addition to the cotyledons or seed-leaves, they require to be transplanted; and this may either be done into small pots, or into a bed of earth, placed on a hot-bed, formed in the same manner as the first, but with a smaller quantity of material, as much less heat is required. For a small garden, however, a second hot-bed is unnecessary; and all the transplanting and other processes preparatory to removal to the open ground, may be carried on in one hot-bed; care being taken to inure the plants to the open air by degrees, by tilting the sash up behind at all times, night and day; and after the plants are up, removing it altogether, during fine days. The great object to be kept in view, is to make the plants as strong and vigorous as possible before turning them into the open ground, and to give them air, or to thin and transplant them whenever they show symptoms of becoming weak or drawn up.

The above directions for making a hot-bed, will not apply to tan or dead leaves, as these substances are not sufficiently compact to allow of their being built up into a regular bed. When they are used, a kind of box must be formed of bricks, boards, layers of turf, or stiff earth, and the tan or leaves filled in so as to make a bed. All the rest is exactly the same. Where neatness is a paramount object, the hot-bed of stable manure may be thatched with straw, so as to make the outside perfectly neat and clean; or the outside may be covered with bass mats, pegged down to keep them close. A hot-bed for tender annuals, will never want what are called linings;

as it is for the advantage of the plants that the heat should decline gradually as they increase in size, that they may be the more fit for transplanting, when the season arrives for them to be removed to the open ground.

THE SOIL FOR GROWING TENDER ANNUALS.—The soil used for filling the pots in which tender annuals are sown, should be as rich as possible, and yet quite open in its texture: it should also be free from grubs and the eggs of insects. As soil of this description is not to be procured without some trouble, we shall give the following directions for preparing it, which have been kindly sent to us by the same excellent practical gardener to whom we were indebted for directions respecting the larkspurs. He says, that the best soil is turf, but as this is usually full of worms and the eggs of insects, it will require the following preparation:—"Take a spade deep of the surface of some good rich pasture; or if only the turf two or three inches thick, so much the better. Lay this up in a ridge, eighteen inches wide at bottom, three feet high, and of whatever length may be required. Then take the fresh stable manure, which is to be used in making the hot-bed, before it has been turned over, and lay it all round the turf and over it, distributing it as equally as possible. If there is plenty of manure, in proportion to the quantity of turf, the turf may be easily heated to 200 degrees, which will not only destroy all the insects, &c., but all the roots and herbage, and moreover wonderfully enrich the soil, by the distillation of the gas evolving from the manure, during its fermentation. The manure must be turned over once or twice, while covering the turf, to prepare it for making the hot-bed; and when it is ready, the ridge of turf must be removed to some shed, or airy place, to dry it, when it will be fit for use. This is the best possible soil for annuals; but when put into the pots, it must be mixed with a little vegetable mould, (formed of dead leaves laid in a heap, and turned over from time to time till they rot into mould,) and sand. An old hot-bed, or decayed dung of any kind, is not good for tender plants, as it is apt to turn the whole soil sour, or soddened (at least if much watered). In the summer, turf may be seasoned without manure, by covering it with the short grass mown off the lawn, which will ferment; but this plan is very far inferior to the other, though it is superior to the old method of laying up the turf for a year or more before it was used. By the hot-dung process, it will be ready in ten days; and not more should be prepared than will be wanted for one season's sowing and transplanting." *D. B.*

SOWING AND TRANSPLANTING.—If the soil has been properly prepared, it will be found, when dry, though very rich, to be perfectly light and fine. The next step is, to fill the pots with it. These should be of a moderate size, and filled about an inch deep with rather small pieces of broken pots, or potsherds, as they are called. This is to ensure drainage, as, if the water be suffered to lodge, the soil will soon become black and sodden, and the seedlings will turn yellow, and drop off. As the pot is filled with earth it should be shaken, to make the earth settle, and then more earth put in; as, if this is not done, the first watering will make the earth sink a considerable depth down the pot. The pots being properly filled, the next step is to procure the seed. Of choice and delicate sorts, it is always advisable, if possible, for ladies to save their own seed, and nothing can be more easily done. When the seed is ripe, it only requires to be gathered, and put in little paper trays in some warm place to dry; when dry, it should be freed from the seed pod, and put into little paper bags, or wrapped in paper with the names written upon it, and kept till wanted for use. If it is intended to keep for a year or two, it may remain in the pod; but it is always best to sow the seed when it is quite fresh. No oily seed will keep well; and the seeds of all tender annuals generally soon lose their vegetative powers. One of the great advantages of saving seed is, to know its exact age; and to be able to judge from that, as to the probability of its coming up. Nothing is more provoking than, after all the trouble of sowing, &c., to be disappointed by the seeds

being bad. "When seeds are saved, it should only be from the strongest and healthiest plants, and the largest pods only should be chosen. It is from not attending to these rules, that plants of the same species are found so much more difficult to raise some seasons than others."—*D. B.* The seeds of tender annuals are generally sown thick, except of such kinds as will not bear transplanting.

In every plant there is a part called the collar, from which the stem and leaves shoot upwards, and the root downwards; but some plants, if encouraged by earthing up, or transplanting deeper, will throw out roots above the collar, such as the balsam, French marigold, &c.; and these plants are improved by transplanting, as every additional root which they throw out will afford an additional mouth for enabling them to imbibe nourishment. Other plants which do not throw out roots above the collar are, on the contrary, checked by transplanting; and annuals of this kind should be sown as thin as possible. In all cases where the young seedlings are beginning to interfere with each other in their growth, they should be thinned out to one, three, or five plants in a pot, according to the habits of the different kinds; and these, transplanted into single pots, should be frequently removed into larger pots, till they are ready to be turned into the open border, or to flower in a room or greenhouse. "When tender annuals are to be grown in pots during winter, they should be sown early in autumn, so as to get them strong, and once transplanted, at least, before the beginning of November; after which no tender plants should be potted (unless under extraordinary circumstances), until the beginning of February, or even till the middle of that month."—*D. B.*

WATERING.—There are few points in which lady gardeners are so apt to err as in watering; and the general fault is, that they give their plants too much. This is a fatal error for plants in pots, since over-watering will soon bring on the evils we have already described, as attendant on imperfect drainage; it is even dangerous to syringe the plants too much, though a little water thrown over their leaves occasionally is very useful in refreshing them. "If the plants should become dusty, or infected with insects, the pot should be carefully turned on its side before the syringe is applied; and this plan has not only the advantage of saving the soil in the pot from becoming sodden with too much water, but also of enabling the operator to wash the lower sides of the leaves, where the red spider, one of the greatest enemies of plants in pots, generally commences its depredations. When the plant is too large or too delicate to admit of the pot being laid on its side, two pieces of board with a notch cut in each, to allow room for the stem of the plant, and wider than the rim of the pot, should be laid over the earth, so as to carry off the water that falls from the leaves."—*D. B.*

THE CULTURE OF THE HUNNEMANIA.

Though this plant, when treated as a tender annual, will flower all the summer when planted out into the open border, and though its splendid flowers are produced in great abundance, yet, as we have already observed, it is very scarce in gardens. This arises from its being treated as a perennial, and when it dies off (which according to its nature will be in two or three years) from its not being renewed. The seeds of the *Hunnemania* do not long retain their vegetative powers, and therefore the sooner they are sown after ripening the better. When they are bought at a seed-shop, as their exact age cannot be ascertained, they must be sown very thick, as it is very probable that not more than one in fifty or a hundred will come up.

The seed-pods of the *Hunnemania* may be kept in a cool dry frame, where the young plants, when they come up, may have plenty of air. When they are large enough to be transplanted they should be potted off singly into

thumb-pots filled with light sandy peat. The pots in which no young plants appear should not be thrown away till the following May, as after remaining dormant so long, the seeds will sometimes come up; and even after that period the earth should be carefully turned out of the pot, and the ball sunk in a shady situation in a well-drained bed or border, taking care that the seeds are not deeper than they were in the pot. The pots should then be turned over them; and, if looked at from time to time, the seedlings will be found sometimes to have come up after they have been for several months in the ground.

“The young plants of the *Hunnemania*, if in a greenhouse, should be kept in an airy place near the glass; and if the seeds were sown as soon as they were ripe, the young plants by the beginning of October ought to be transplanted into one size larger pots, in which they should remain till the end of March, when they should be potted into rich soil, and inured to the air as much as possible, in order to prepare them for being planted into the open border by the end of May. They will come into flower almost immediately, and will continue flowering from the 1st of June till killed by the autumnal frosts. They do not seed freely out of doors, and therefore a plant or two should be kept in the greenhouse or frame for seed. These plants should be kept in small pots and a poor soil in order to throw them into seed. *Argemone grandiflora*, when grown as an annual, may be treated exactly like *Hunnemania*; except that it may be planted out by the beginning of May, from which time it will flower to the end of September. When grown as a perennial it will not require any protection during winter, as it is quite hardy.” *D. B.*

Seeds of *Hunnemania* are rather scarce, but they may be obtained at Mr. Charlwood's, Tavistock Row, Covent Garden.

CHAPTER III.

SUB-ORDER FUMARIÆ.

ESSENTIAL CHARACTER.—Sepals 2, deciduous. Petals 4, cruciate, parallel; the two outer either one or both sacate at the base; the two inner callous and coloured at the apex, where they cohere and enclose the anthers and stigma. Stamens 6, in two parcels, opposite the outer petals, very seldom all separate; anthers membranous, the outer of each parcel 1-celled, the middle one 2-celled. Ovary supe-

rior, 1-celled; ovules horizontal; style filiform; stigma with two or more points. Fruit various; either an indehiscent 1 or 2-seeded nut, or a 2-valved or succulent indehiscent polyspermous pod. Seeds horizontal, shining, crested. Albumen fleshy. Embryo minute, out of the axis; in the indehiscent fruit straight; in those which dehisce somewhat arcuate. (*Lindl.*)

OBSERVATIONS, &c.—The Fumitory tribe is made a distinct order by Professor De Candolle and many other botanists; while Bernhardt and others consider the plants included in it as belonging to Papaveracæ; and Dr. Lindley has made Fumariæ a sub-order of Papaveracæ. We have followed the latter arrangement. “The arguments of Bernhardt,” Dr. Lindley observes, “for the combination of Papaveracæ and Fumariæ are remarkably unsatisfactory; and certainly have produced no impression on my mind. But the seeds, and very often the fruit of these plants are so much the same, and the genus *Hypecoum* is so exactly intermediate between the two,



1. *Francoa Sonchifolia*.
2. *Francoa appendiculata*.

3. *Didiscus carulea*.
4. *Hypochaeris procumbens*.

that I think it is more advisable on the whole to consider Fumariæ as a reduced and irregular form of Papaveraceæ than a distinct natural order." (*Lindl. Nat. Syst. of Bot., 2d edit. p. 10.*)

The principal popular distinctions between the Fumitory tribe and the Poppies are that the juice of the former is watery, and the latter milky, and that the stems of the Fumitory are very brittle. The petals of the most common kinds of fumitory are also tubular and curiously shaped, somewhat resembling the flower of the larkspur, while those of the poppy tribe are cup-shaped.

GENUS I.

HYPECOUM, *Tour.* THE HYPECOUM.

Lin. Syst. TETRANDRIA DIGYNIA.

GENERIC CHARACTER.—Petals 4, inner ones usually 3-lobed. Stamens 4. Stigmas 2. Capsules elongated, 2-valved, knotted or jointed transversely.—(*G. Don.*)

DESCRIPTION, &c.—Small plants with yellow flowers, and very remarkable seed-pods, natives of the south of Europe and Asia; which have been long since introduced into Britain, but which are very seldom seen in flower-gardens. The name of *Hypecoum* is derived from the Greek word *hypecheo*, to rattle, from the seeds rattling in the pods when shaken.

1.—HYPECOUM PROCUMBENS, *Lin.* THE PROCUMBENT HYPECOUM.

SYNONYMES.—*H. nodosum*, *Lam.*; *H. arcuatum*, *Mench.*

ENGRAVINGS.—Swt. Brit. Fl. Gard. t. 217, and our *fig. 4* in Plate 7.

SPECIFIC CHARACTER.—Capsules articulated, compressed, arched;

petals 3-lobed, external ones smooth on the back. The two outer petals largest. Central segment of the inner petals toothed.—(*G. Don.*)

DESCRIPTION, &c.—This curious little plant is interesting in a botanical point of view, as forming the connecting link between the poppies and the fumitory tribe; plants so different, however, in their external appearance, that no common observer who has seen the common fumitory and the corn poppy growing near each other in a corn-field, would ever imagine that there was the slightest relationship between them. The *Hypecoum*, though resembling the fumitory in its leaves, certainly at first sight appears much more like a poppy in its flowers; but upon examination, even its flowers will be found very different from those of any of the poppy tribe. They are not produced singly, each on a long flower-stalk rising from the root-leaves, like those of the poppy, but in little heads, each somewhat resembling an umbel when the flowers first expand, but forming afterwards a kind of raceme. The flowers are produced sometimes two together, and sometimes singly, on the short foot-stalks, which united form this head or umbel; and each flower is small, of a bright yellow, and rather curiously formed, being composed of four petals, three-lobed and toothed at the edges, the two outer ones of which are much larger than the others, something like those of the *Platystigma* which we mentioned in a former page.

The seed-pods of the *Hypecoum* are very curious ; they are very long, and curve downwards like those of the horned poppy, and they are jointed like those of the *Platystemon*, so that this plant is extremely interesting, as showing some of those mysterious links by which the Almighty Creator of the universe has bound all the vegetable world together, in the same way as He has united it with the animal world through the walking-leaf and the zoophytes, and the different kinds of animals with each other. The leaves of the *Hypecoum* are glaucous and deeply cut, closely resembling those of the fumitory. The stems are procumbent, and lie on the ground unless trained up.

The *Hypecoum* is a native of the South of Europe, from Spain to Astracan ; but it is only found in sandy places. It was introduced before 1594, and it is mentioned by Gerard under the name of horned wild Cummin. Parkinson calls it the true *Hypecoum* of Dioscorides, as described by Clusius, and he has given a very good figure of it. It has always been partially in cultivation since its introduction, though it is now seldom seen but in botanic gardens. When cultivated, the seeds should be sown in very light or sandy soil where they are to remain, as the plant has a long descending or tap root, and will not bear transplanting. When the plants come up, if they are to be left in their natural procumbent state, they should be thinned out to at least six or eight inches apart ; but if they are to be trained they may be left nearer. Before the seeds are sown they should be divested of their fungous covering ; as, if this precaution be omitted, they will not germinate until it is decayed. From this being neglected, the seeds of the *Hypecoum* will sometimes remain two or three years in the ground before they vegetate. When required to flower early, the seeds may be sown in autumn, as the plant is quite hardy, and will stand the winter in the open ground without any protection. Its seeds freely, and would, no doubt, soon have become common, were it not for the peculiarity we have just mentioned, of the seeds. Trained over a bank, by occasionally forking down the branches, or drawn through a wire ring or hoop, raised by three slender supports about six or eight inches from the ground, it makes a very pretty bush covered with its bunches of yellow flowers, and long horn-like pods.

Seeds may be purchased at Mr. Charlwood's seed-shop, Covent Garden. The specimen our figure was taken from grew in the Horticultural Society's Garden at Turnham Green, where the plant, in the autumn of 1838, formed a large mass as it lay procumbent on the ground.

OTHER SPECIES OF HYPECOUM.

These are quite hardy, and are marked in the botanical works as having been introduced, but we have never seen them growing, and we do not know where they are to be procured.

2.—*H. PENDULUM*, *Lin.*

The flowers are large and of a pale yellow, and the edges of the petals are entire. The capsules are knotted, and hang straight down without any curvature. A native of Europe, from Spain to the Caspian Sea. Introduced before 1640, as it was mentioned and figured by Parkinson in that year. Procumbent like the common kind.

3.—H. ERECTUM, *Lin.*

This species has the largest flowers of any of the genus. Its capsules are not jointed, and instead of hanging down, they stand erect. The plant itself grows rather higher than the other kinds. It is a native of the Crimea, spreading across Asia to the mountains of China.

GENUS II.

CORYDALIS, *Dec.* THE CORYDALIS.

Lin. Syst. DIADELPHIA HEXANDRIA.

GENERIC CHARACTER.—Petals four; one of which is furred at the base. Silique two-valved, compressed, many-seeded.—(*G. Don.*)

DESCRIPTION, &c.—This genus has been divided from the genus *Fumaria* (the common Fumitory), on account of its capsule opening when ripe, into two valves, and containing many seeds; while the capsule of the *Fumaria* does not open, and contains only one seed. The name of *Corydalis* is derived from the Greek word *korydalos*, a lark, because the shape of the flower somewhat resembles that of the larkspur.

1.—CORYDALIS GLAUCA, *Pursh.* THE GLAUCOUS-LEAVED CORYDALIS.

SYNONYMES.—*Fumaria sempervirens*, *Lin.* *F. glauca*, *Curt.*
Corydalis sempervirens, *Pers.*

ENGRAVING.—*Bot. Reg.* t. 179.

SPECIFIC CHARACTER.—Stem erect, branched. Leaves bipinnate,

glaucous; pinnulæ somewhat pinnatifid. Segments stalked, curved, trifid. Bractees oblong, acute, shorter than the pedicels. Capsules linear.—(*G. Don.*)

DESCRIPTION, &c.—A low plant, with very small glaucous, or bluish green leaves, and little pink and yellow flowers. The seed pods are rather long, and so very slender, that they look more like long stamens than seed pods. The manner of growth of the plant, from its very small leaves, which are few and far asunder, and its small, oddly-shaped flowers, which are huddled together at the extremity of the shoots, render it far from ornamental; yet it is frequently found in flower-gardens from its seeding freely, and sowing itself. Indeed, where it has been once sown, it is not easily got rid of. It is a native of rocks in Canada, and of the Alleghany mountains. It was introduced in 1683, and its seeds may be had in most of the seed-shops.

2.—CORYDALIS CLAVICULATA, *Dec.* THE WHITE CLIMBING CORYDALIS.

SYNONYME.—*Fumaria claviculata*, *Lin.*

ENGRAVINGS.—*Eng. Bot.* t. 103; 2nd edit. vol. vi. t. 985.

DESCRIPTION, &c.—A pretty little climbing plant with very slender stems, and small white or pale yellow flowers. It is a native of Britain, where it is very common in woods and in shady places, in a sandy or gravelly soil; but where, from its very slender feeble stems and inconspicuous flowers, it is seldom noticed, except by botanists. Sown in a garden, and its slender stems and branching tendrils trained up a trellis, it makes a very

pretty object, from its feathery lightness and gracefully drooping habit of growth. We do not know whether any seedsman has thought it worth while to gather the seeds for sale, but it is very common in the woods of some parts of Sussex, and, in short, wherever the soil is sandy or gravelly.

OTHER SPECIES OF THE SUB-ORDER FUMARIEÆ.

There are several kinds of annual *Corydalis* which are said to have been introduced, but which, from their flowers possessing but little beauty, have not been much cultivated. The most remarkable of these is *C. impatiens*, Fisch, a native of the Crimea, with yellow flowers, and capsules which burst and roll up when they are touched, like those of the *Noli me tangere*. All the kinds of *Corydalis* require a light soil, and should be sown where they are to remain.

FUMARIA, *Lin.*

Of the different annual kinds of *Fumaria*, the handsomest is *F. capreolata*, the flowers of which are white tipped with dark purple. *F. officinalis*, the common fumitory, is that little pale red flower so common in corn fields. An infusion of its leaves was formerly thought an admirable cosmetic, and their expressed juice was taken twice a day in whey as "a sweetener of the blood." What this phrase (which was in constant use, even in medical books fifty or a hundred years ago) means, is not exactly known; but as the leaves of the fumitory are excessively bitter, they probably act as a tonic. *F. Vaillantii* and *F. densiflora* have dark purple flowers; and *F. leucantha* white ones. They are all weedy-looking plants, and scarcely worth cultivating. The best place for sowing them is under a hedge, where they will climb up among the branches, and their flowers only being seen will look tolerably well. Some of the kinds are very suitable for rock work. The name of *Fumaria* alludes to the disagreeable smell of the plants, which resembles that of smoke.

DISCOCAPNOS MUNDTHII, *Schlect.* MUNDT'S DISCOCAPNOS,

only differs from *Fumaria* in the fruit being membranous, and girded with a wing. The leaves are of a bluish green, and furnished with tendrils; and the flowers, which are in racemes of from five to eight flowers each, are red.

CYSTICAPNOS AFRICANA, *Gart.* THE BLADDER FUMITORY,

is a native of the Cape of Good Hope. It is a slender climbing plant, with small white flowers tipped with red. It was introduced in 1696, but we do not know where it is now to be procured. It takes its name from its capsules, which are bladdery, and contain many seeds.

DIELYTRA SCANDENS, *D. Don.* THE CLIMBING DIELYTRA,

is a climbing annual, a native of Nepaul. The flowers, which are yellow tinged with brown, differ from those of the *Fumaria* in having two horns. This plant has not yet been introduced; but from the descriptions which have been given of it, it appears well deserving of cultivation.

CHAPTER IV.

UMBELLIFERÆ.

ESSENTIAL CHARACTER.—Flowers usually disposed in umbels. Calyx superior. Disk epigynous, very thick, in two or more pieces. Carpels always 1-seeded. Stems usually hollow.—(*Lindl.*)

GENUS I.

DIDISCUS, *Dec.* THE DIDISCUS.

Lin. Syst. PENTANDRIA DIGYNIA.

1.—DIDISCUS CÆRULEUS, *Dec.* THE AZURE DIDISCUS.

GENERIC CHARACTER.—Margin of the calyx obsolete. Petals oval, bluntish, imbricate in æstivation. Fruit didymous, emarginate at the base. Mericarps rough from pilose strigæ, 5-ribbed, two middle ribs approximating the commissure. Involucrum of many leaves, which are concrete at the base.—(*G. Don.*)

SYNONYMES.—*Trachymene cyanæa*, *Cunn.*; *T. cærulea*, *Graham*; *Hugelia cyanæa*, *Rehb.*

ENGRAVINGS.—*Bot. Mag.* t. 2875; *Bot. Reg.* t. 1225; and our *fig. 3*, in plate 7.

SPECIFIC CHARACTER.—Plant hairy; leaves petiolate, 3-parted; having the partitions 2-3-cleft, and the lobes 2-3-toothed; umbels simple, on long peduncles; involucrum of many leaves, when young reflexed.—(*G. Don.*)

DESCRIPTION, &c.—A very beautiful half-hardy annual, with azure blue flowers, produced in umbels. When the flowers drop, the little stalks on which they grew twist inwards and enclose the seed as in a cage. The leaves are lobed and large, and the stem erect and rather tall. This beautiful plant is a native of New Holland, and was introduced in 1827. It was first raised in England in the Horticultural Society's Garden, from seeds sent home from Sydney by Mr. Charles Frazer. It is frequently called *Trachymene cærulea* in the seed-shops, from its having been thus designated in the *Botanical Register* for 1829. In the first volume of the *Ladies' Botany*, however, published in 1834, Dr. Lindley has called it *Didiscus cærulea* (p. 32). It must be cultivated as a half-hardy annual; and if the seeds are sown in a hotbed in March, they will be ready for planting out in June, and will flower in August or September, and continue beautifully in bloom till November, or till they are killed by the frost. "If sown in August, the plants should be potted in small pots in October, and kept rather dry than otherwise during the winter. Thus treated, and removed into larger pots in spring, they will flower beautifully in a frame or greenhouse, and much better than in the open ground. These plants should never be headed down, as their flowers are produced at the extremity of the main stem and branches."—*D. B.* If kept in the greenhouse, and constantly changed into larger pots as they grow, they will become very fine, and flower beautifully; and our drawing was made from a plant in the nursery of Messrs. Osborn at Fulham, which had been treated in this manner; but we have since seen some equally fine specimens growing in the open air.

CHAPTER V.

FRANCOACEÆ.

<p>ESSENTIAL CHARACTER.—Calyx deeply 4-cleft. Petals 4, inserted near the base of the calyx. Stamens sub-hypogynous, four times as numerous as the petals, alternately rudimentary. Ovary superior, with four cells, opposite the petals; ovules numerous; stigma</p>	<p>4-lobed, sessile; capsule membranous, 4-valved, with a loculicidal or septicidal dehiscence. Seeds numerous, minute, with a minute embryo in the base, of fleshy albumen.—(<i>Lindl.</i>)</p>
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GENUS I.

FRANCOA, *Cav.* THE FRANCOA.*Lin. Syst.* OCTANDRIA TETRAGYNIA.

GENERIC CHARACTER.—Calyx 4-parted. Petals 4. Stamens distinct 16, 8 of which are fertile; anthers 2-celled. Stigma 4-lobed. Capsule tetragonal, 4-celled.—(*G. Don.*)

DESCRIPTION, &c.—All the kinds of *Francoa* are, properly speaking, perennials, but treated as the *Hunne-
mania*, they make beautiful half-hardy annuals; and they are more useful in this way than in any other, because, as perennials, they are too tender to live through the winter in the open air without protection, and of course occasion considerable trouble and expense. Besides this, it has been found that they can only be propagated by seeds.

1.—FRANCOA APPENDICULATA, *Cav.* THE COMMON FRANCOA.

<p>ENGRAVINGS.—Bot. Mag. t. 3178; Bot. Reg. t. 1645; Brit. Flow. Gard. 2d Ser. t. 151; and our <i>fig.</i> 2 in Plate 7.</p>	<p>secund; calycine segments lanceolate, acute; lobes of stigma curved, emarginate.—(<i>G. Don.</i>)</p>
<p>SPECIFIC CHARACTER.—Stemless; leaves petiolate; racemes loose,</p>	

DESCRIPTION, &c.—The plant is without a stem, properly so called, but it sends up its long flower-scapes from a mass of large deep green leaves, shaped like those of the turnip. The flower stems or scapes rise nearly two feet high, and terminate in a spike of pale pink flowers, beautifully marked with spots of a deeper pink in the middle. This plant is a native of the island of San Carlos de Chiloe, in South America; and it was introduced in 1830, by Mr. Anderson, who accompanied Captain King, as botanist, in his expedition to survey the coasts of South America. The plant had been before discovered by Don Luis Nee, naturalist to the Spanish expedition under Masalpina, and it was from dried specimens of it that Cavanilles founded the genus *Francoa*. It flowered for the first time in England in Mr. Low's nursery at Clapton. It is properly a perennial, but if cultivated as directed for the *Hunne-
mania*, it will make a beautiful border annual. When plants are reserved for seed, they should be kept in pots in a frame or greenhouse; but the flowers are never so fine or so highly coloured on plants grown in pots, as on plants in a warm border in the open air. Seeds may be had at Charlwood's.

2.—FRANCOA SONCHIFOLIA, Cav. THE SOWTHISTLE-LEAVED FRANCOA.

ENGRAVINGS.—Bot. Mag. t. 3309; Brit. Flow. Gard. 2nd Ser. t. 169; and our *fig.* 1, in Plate 7. | loose, nodding; calycine segments dilated; petals with involute margins; stigmas elliptic, entire.—(*G. Don.*)

SPECIFIC CHARACTER.—Plant caulescent; leaves sessile; racemes

DESCRIPTION, &c.—This plant rises with a stem covered with leaves about a foot high, and then sends up its flower-scape which throws out many branches. The flowers are small and of a dark purple. Altogether this kind of *Francoa* is not so handsome as the other; and its large leaves hanging down from the stem give it an untidy appearance. It was raised from seeds collected near the city of Concepcion, in Chile, and brought home by Mr. Anderson in 1830. It flowered for the first time in England, in the Chelsea Botanic Garden. Dr. Lindley, and Sir W. J. Hooker, consider this kind as only a variety of *F. appendiculata*. The culture is the same as of that plant; and seeds are to be procured at Charlwood's.

3.—FRANCOA RAMOSA, D. Don. THE BRANCHED, OR WHITE-FLOWERED FRANCOA.

ENGRAVING.—Brit. Flow. Gard. 2d Ser. t. 223.

SPECIFIC CHARACTER.—Plant caulescent; leaves petiolate; racemes | spirate, erect; calycine segments lanceolate, obtuse, nerveless; lobes of stigma curved.—(*D. Don.*)

DESCRIPTION, &c.—This species of *Francoa* is so different from the others, as scarcely to be recognised by a general observer as belonging to the same genus. The stem is erect and branched; the leaves are small and of a pale green. The flowers are white, with small round petals, and they form loosely-branched racemes rather than spikes. This plant was first discovered near San Jago in Chile, and described from dried specimens by Professor Don; but it was afterwards found on the hills near Valparaiso, where seeds were collected by Mr. Hugh Cumming, and brought to England by him in 1831. It flowered for the first time in England in Mr. Knight's exotic nursery, King's Road, Chelsea, having been grown in a mixture of sandy peat and loam. All the *Francoas* require light dry soil; and if grown in pots, to have abundant drainage. We suppose seeds may be obtained from Mr. Knight, but we have not seen the name of the plant in any seed catalogues.

CHAPTER VI.

ONAGRACEÆ.

ESSENTIAL CHARACTER.—Calyx superior, tubular, 4-cleft; petals 2 or 4, convolute in æstivation. Stamens 2, 4, or 8, perigynous. Fruit baccate or capsular.—(*G. Don.*)

DESCRIPTION, &c.—All the species belonging to this order are ornamental, and the annual kinds are particularly splendid. It may appear strange to those who are not acquainted with botany, to find that the evening primrose and the *Clarkia* belong to the same natural order as the *Fuchsia*; yet such is the case, as they all resemble each other in a botanical point of view. As some of the popular distinctive marks of this order, we

may mention the position of the capsule, which, being below the calyx, looks like the foot-stalk of the flower, and that all the parts of the flowers are in even numbers—such as twice two, or twice four. For example, in the genus *Cœnothera* there are four sepals, four petals, and eight stamens. The capsule is also four-celled, and the stigma four-lobed. This constant adherence to even numbers is peculiar to the *Onagracea*.

GENUS I.

Cœnothera, *Lin.* THE *Cœnothera*, OR THE EVENING PRIMROSE.

Lin. Syst. OCTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Limb of calyx 4-parted. Petals 4. Capsule oblong-linear, bluntly tetragonal or clavate, 4-celled. Seeds naked.—
(*G. Don.*)

DESCRIPTION, &c.—The beautiful plants which used formerly to compose the genus *Cœnothera*, have lately been divided by M. E. Spach, a German botanist residing in Paris, into no less than fourteen genera (see *Annales des Sciences Naturelles*.—*Botanique*, 2d Ser. tom. iv. p. 161); but many of these genera are founded on such very slight distinctions, that they have not been adopted by botanists in general. *Godetia* is the only one of M. Spach's genera which has been adopted by Dr. Lindley, and it includes all the purple and lilac-flowered *Cœnotheras*, as they all have a part of their seeds bordered by a feathery margin, so small however as to be quite imperceptible without a very powerful microscope, as the seeds themselves are not larger than grains of sand. Spach's genus *Boisduvalia* has also been adopted by some botanists: it contains two species, *Cœnothera densiflora*, *Lindl.*, and *Cœnothera concinna*, *D. Don*; and the distinctive mark is, that the four stamens opposite the petals are much shorter than the others. Dr. Lindley, however, rejects this genus. We have entered more at length into these botanical distinctions than we should otherwise have done, because the name of *Godetia* has been generally adopted for the three new lilac-flowered specimens introduced in 1835, while the other purple and lilac kinds are all still called in the seed-shops by their original name of *Cœnothera*. For this reason, and because Dr. Lindley states (*Bot. Reg.* t. 1829), that he considers the purple-flowered kinds distinct, and that they will not mix with the true yellow-flowered evening primroses, we shall follow him in calling the purple and lilac-flowered species *Godetia*, and arranging all the other kinds under the general name of *Cœnothera*.

The name of evening primrose was given to the *Cœnotheras* because *Cœ. biennis* (a yellow-flowered biennial species), which was the first introduced from America, has the habit of closing its flowers during sunshine, and not opening them till evening, or during cloudy weather, and this is the case with several other species. The name of *Cœnothera* (which is said to be derived from two Greek words, signifying wine inducer) is also supposed to be taken from *Cœnothera biennis*; as, when that plant was first introduced, its roots were eaten like olives, to give a relish to wine. *Cœ. biennis*, in the old catalogues of plants, is called the tree primrose of Virginia.



1. *Godetia venosa* — 2. *Eriotheca sinuata* — 3. *Godetia rubicunda* — 4. *Godetia leucophaea* —
 5. *Godetia humilis* — 6. *Godetia cheiranthifolia* — 7. *Eriotheca tetraptera* — 8. *Godetia rosea alba* —
 9. *Eriotheca Drummondii* — 10. *Godetia Romangovii* — 11. *Eriotheca consimilis*.

FLOWERS WHITE.

1.—*ÆNOTHERA TETRAPTERA*, Cav. THE WHITE-FLOWERED EVENING PRIMROSE.

SYNONYME.—*Hartmannia macrantha*, Spach.

ENGRAVINGS.—Bot. Mag. t. 468, and our fig. 7, in Plate 8.

SPECIFIC CHARACTER.—Stem branched, pilose. Leaves lanceolate, pinnatifid, or toothed, somewhat ciliated, hardly petiolate; tube of

calyx almost wanting. Petals obcordate, entire. Stamens and pistil shorter than the corolla. Anthers and stigma narrow and long. Capsule obovate, 4-winged, ribbed, pilose, tapering into a pedicel at the base. Seeds ovate, acute, smooth, pale.—(*G. Don.*)

DESCRIPTION, &c.—The plant is of a compact habit of growth, and it is beautiful from its large sweet-scented white flowers, which change to pink as they fade. Its capsules are very curious, having distinctly four wings; and its leaves are also remarkable from their pinkish tinge. There are so very few annual white evening primroses, that this species deserves to be in every garden. It is a native of Mexico, and was first raised in the Cambridge Botanic Garden, from seeds sent, in 1796, to the Marchioness of Bute, by Professor Ortega, of Madrid. It is quite hardy, and may be sown in the open border as directed for *Flos Adonis*, in March or April, in which case it will flower in June or July. If treated as a tender annual, and raised in pots on a hotbed, in the same months, its flowers will be much larger and finer after it is planted out. It is a true evening primrose, its flowers never expanding in the sunshine, but generally opening about six o'clock in the evening, and fading before morning. It flowers abundantly, and will continue producing a succession of blossoms during the whole summer. Seeds may be had at Charlwood's, or any seed-shop.

2.—*ÆNOTHERA PURSHII*, G. Don. PURSH'S EVENING PRIMROSE.

SYNONYMS.—*Æ. albicaulis*, Pursh; *Æ. pinnatifida*, Nutt.; *Anogra pinnatifida*, Spach.

SPECIFIC CHARACTER.—Pubescent. Stem decumbent, white; radical leaves nearly entire, cauline ones pinnatifid, with linear, acute,

divaricate segments. Nerves of leaves white, like the stem. Flowers few, disposed in a kind of spike. Petals obcordate, white, large, longer than the stamens. Style filiform. Ovaries sessile, prismatic, furrowed.—(*G. Don.*)

DESCRIPTION, &c.—A trailing species, with white stems and pinnatifid leaves. The flowers are large and white, and they are disposed in a kind of spike. It is a native of North America, on the plains of the Missouri. It is said to have been introduced in 1811, but we have never seen it, and do not know where seeds of it are to be procured. There are two other kinds of annual white evening primrose, one a native of Mexico, *Ænothera latifolia*, Moc. et Sess.; and the other *Æ. Boothii*, Dougl., a native of California; but they have not yet been introduced.

FLOWERS YELLOW.

2.—*ÆNOTHERA CHEIRANTHIFOLIA*, Horn. THE STOCK-LEAVED ÆNOTHERA.

SYNONYME.—*Halostigma cheiranthifolium*, Spach.

ENGRAVINGS.—Bot. Reg. t. 1040, and our fig. 6, in Plate 8.

SPECIFIC CHARACTER.—Stem decumbent, round, red, hairy, and branched. Leaves glaucous, pubescent, of several shapes; the lower spatulate, on long stalks, distant, the upper close together, somewhat

sessile or stalked, sometimes oblong, sometimes ovate, and rather cordate, all obtuse. Flowers solitary, axillary, a little longer than the leaves, bright yellow becoming tawny. Ovary subulate, a little bowed, villous. Sepals villous. Stigma capitate.—(*Lindl.*)

DESCRIPTION, &c.—A very pretty and perfectly hardy species, “distinguished by its trailing habit, bright red stems, very glaucous leaves, and bright lively yellow flowers.”—(*Bot. Reg.* t. 1040.) A native of Chile, from

which country it was first sent to Denmark, and thence to M. Otto, at the Botanic Garden, Berlin, from whom seeds were received by the London Horticultural Society in 1825. It flowered in the Horticultural Society's Garden the following year, producing an uninterrupted succession of blossoms from July, till destroyed by frost. We do not know where seeds are to be procured, as it has been lost by the Horticultural Society; but seedsmen might easily obtain them from Berlin. It should be raised in pots on a hotbed, and planted out in May, without breaking the balls of earth that had formed round the roots while they were in the pots.

4.—*ÆNOTHERA DRUMMONDII*, *Hook.* MR. DRUMMOND'S EVENING PRIMROSE.

ENGRAVINGS.—Bot. Mag. t. 3361, and our *fig.* 9, in Plate 8.

SPECIFIC CHARACTER.—Stem branched, succulent, soft with down, as is the whole foliage. Stamens rather declining. Leaves oblong,

elliptic, somewhat obtuse, and slightly sinuately-toothed, attenuated towards the petiole. Flowers axillary, petals large and yellow. Capsule (immature) cylindrical, striped, and pubescent, with hairs.—(*Hook.*)

DESCRIPTION, &c.—This very beautiful species has large yellow flowers, and bluish-green leaves. When the flowers fade, they assume a rich orange colour. It was found by Drummond in Texas, near the mouth of the River Brazos, in 1833; and was sent by him to the Glasgow Botanic Garden, where it flowered abundantly in the open border. Sir W. J. Hooker calls it perennial, or suffruticose; but some seeds which we had from Mr. Charlwood, and which were sown in a warm border at Bayswater, in May 1838, produced their splendid large yellow flowers in the August and September following. The flowers, however, were not numerous, and the seeds did not ripen; so the plant would probably succeed best if treated as a tender annual, and sown in pots on a hotbed in March or April, and planted out, without breaking the balls, in May. Even in the way we grew the plants, they were well deserving of cultivation, from the size and rich colour of their flowers.

5.—*ÆNOTHERA SINUATA*, *Michx.* THE SCALLOP-LEAVED EVENING PRIMROSE.

ENGRAVINGS.—Bot. Mag. t. 3392; and our *fig.* 2, in Plate 8.

SPECIFIC CHARACTER.—Plant decumbent, clothed with soft pubescence. Leaves lanceolate, sinuately-toothed or cut. Flowers small.

Sepals unguiculate towards the apex. Capsules cylindrically tetragonal, somewhat incurved, pilose, length of the bractæas.—(*G. Don.*)

DESCRIPTION, &c.—A decumbent plant, with stems one foot or two feet long, and much branched; they are round, covered with pubescence, and often tinged with purple. The leaves are large, and so deeply cut as to give rise to the name. The flowers are rather small and cup-shaped; the capsules are long, four-sided, and hairy. This species is said, in the *Hortus Kewensis*, to have been introduced in 1770, by M. Richard. It appears, however, to have been neglected, and probably lost; and it was re-introduced in 1833 by Drummond, who sent seeds of it from Texas to the Glasgow Botanic Garden, where it flowered in the open border in September, 1834. *Æ. minima*, *Pursh*, is a variety of this species. Seeds of both kinds are to be obtained at Charlwood's; and should be sown in the open border, in March or April.

6.—*ÆNOTHERA DENTATA*, Cav. THE TOOTHED-LEAVED *ÆNOTHERA*.SYNONYMES.—*Æ. Chamissonis*, Link. *Holostigma heterophyllum*, Spach.SPECIFIC CHARACTER.—Leaves linear, denticulated, glabrous. Capsule cylindrical, very narrow.—(*G. Don.*)

DESCRIPTION, &c.—A prostrate species, with rather large yellow flowers, a native of Chili and Peru, introduced in 1818. We have never seen the plant, and do not know where it is to be procured.

7.—*ÆNOTHERA HIRTA*, Link. THE HAIRY *ÆNOTHERA*.SYNONYMES.—*Æ. micrantha*, Horn. *Holostigma micranthum*, | ecolate, denticulated. Flowers sessile, minute. Capsules curved,
Spach. | round.—(*G. Don.*)

SPECIFIC CHARACTER.—Hairy. Stem branched, erect. Leaves lan-

DESCRIPTION, &c.—A low, hairy plant, with small yellow flowers, and round, curved capsules. A native of California, introduced in 1823. Seeds may be had, under the name of *Æ. micrantha*, at Charlwood's.

8.—*ÆNOTHERA SALICIFOLIA*, Desf. THE WILLOW-LEAVED EVENING PRIMROSE.SYNONYMES.—*Æ. elata*, Kunth. *Æ. crassipes*, Hort. Berol. | lanceolate, acute, nearly entire, rather pilose, thickish. Stamens and
Onagra Kunthiana, Spach. | pistil equal in length to the corolla. Lobes of stigma oblong-linear,VARIETY.—*Æ. 2 undulata*, Hort. *Æ. odorata*, var. Hort.SPECIFIC CHARACTER.—Stem tall, simple, angular. Leaves oblong- | large, thickish. Capsule oblong, tetragonal. Valves linear, with red
nerves.—(*G. Don.*)

DESCRIPTION, &c.—A tall, handsome species, growing to the height of two feet or three feet, or more, with pale, yellow flowers. The leaves are long, and somewhat fleshy; and the capsules, which are four-winged, are ornamental, from their valves having red nerves. This species is a native of Mexico, and was introduced in 1824. Seeds may be procured at Mr. Charlwood's, and they should be sown on a slight hotbed, in September, if they are wanted to flower in June. They may also be sown in the open ground in May, in which case they will not flower before August or September. This kind of *Ænothera* is tall, and rather untidy in its habits of growth; there should therefore be three stakes forming a triangle at the bottom, and fastened together at top, put over each patch, to tie the plants to. This may be considered as a true Evening Primrose, as the flowers expand only at night, and shrivel up before morning. Its leaves are much thicker and more fleshy than those of any of the other kinds. *Æ. salicifolia*, and the three followings species, are frequently marked as biennials in botanical works, but they may be grown as annuals.

9.—*ÆNOTHERA GRANDIFLORA*, Ait. THE LARGE-FLOWERED EVENING PRIMROSE.SYNONYMES.—*Æ. biennis*, var. *grandiflora*, Lindl. *Æ. suaveolens*, |
Desf. *Onagra vulgaris*, var. Spach. |

ENGRAVING.—Bot. Mag. t. 2068; Bot. Reg. t. 1604.

SPECIFIC CHARACTER.—Pubescent. Stem simple. Leaves lanceolate, | remotely toothed. Stamens deflexed. Petals large, obcordate. Capsule
sessile, cylindrical.—(*G. Don.*)

DESCRIPTION, &c.—A plant, growing about two feet high, with large, bright, yellow, solitary flowers, which spring from the axils of the leaves. This species, which is a native of North America, introduced in 1778, must

not be confounded with the *Æ. grandiflora* of Ruiz and Pavon, a South American perennial species, with very large white flowers, and which has been since called *Æ. taraxacifolia*. Seeds of the yellow *Æ. grandiflora* may be procured at Charlwood's. The seeds should be sown in autumn as soon as they are ripe in the open ground, if the plants are wished to flower in June. If the seeds are not sown in the open ground till March or April, the plants will not flower before August or September. The best way of obtaining fine plants when the sowing has been neglected till spring, is to sow the seeds in pots in a hotbed in March or April, and to turn the plants out in May, taking care, in transplanting them, not to break the ball of earth round the roots.

10.—*ÆNOTHERA MOLLISSIMA*, *Lin.* THE SOFTEST EVENING PRIMROSE.

SYNONYME.—*Æ. nocturna*, *Willd.*

SPECIFIC CHARACTER.—Stem branched. Leaves lanceolate, a little undulated, repandly-toothed, and clothed with soft down. Petals obovate, entire, shorter than the calyx. Stamens and pistil hardly the

length of the petals. Lobes of stigma, filiform. Capsule cylindrical, striated, very long, downy, somewhat tetragonal, a little thickened at the apex.—(*G. Don.*)

DESCRIPTION, &c.—This species strongly resembles the common biennial Evening Primrose (*Æ. biennis*) in its habit of growth. Its flowers are yellow-when they first expand, but they change to red as they fade. The plant is a native of Buenos Ayres, Monte Video, and Chili, where it grows wild in the fields. It was introduced in 1732. Seeds may be had in any seed-shop.

11.—*ÆNOTHERA LINEARIS*, *Michx.* THE LINEAR-LEAVED EVENING PRIMROSE.

SPECIFIC CHARACTER.—Plant slender, pubescent. Leaves linear, entire. Capsules on longish stripes, roundish, tetragonal, villous.—(*G. Don.*)

DESCRIPTION, &c.—A native of Upper Carolina, growing a foot high, with very narrow leaves, and yellow flowers. Introduced in 1822. Seeds may be had at Charlwood's.

12.—*ÆNOTHERA TRILOBA*, *Nutt.* THE THREE-LOBED EVENING PRIMROSE.

SYNONYMS.—*Æ. rhizocarpa*, *Spreng.* *Lavauxia Nuttalliana*, *Spach.*

ENGRAVING.—*Bot. Mag.* t. 2566.

SPECIFIC CHARACTER.—Stemless. Leaves interruptedly pinnatifid,

toothed, glabrous. Petals obovate, slightly 3-lobed at the apex, the middle lobe mucronate. Capsules almost 4-winged, large, sessile at the root.—(*G. Don.*)

DESCRIPTION, &c.—The flowers are of a pale yellow, and are very sweet-scented in the evening. They are remarkable for the length of the tube of the calyx, which often exceeds two inches, and for springing from the root; they are at first produced without any footstalk, and growing to the crown of the root, but under cultivation, after the flowers have dropped, stems bearing the capsules rise about two inches. Dr. Sims, in the *Botanical*

Magazine, calls this species the Dandelion-leaved Evening Primrose, from the leaves resembling those of the Dandelion, but this name has been since given to another species. The leaves all spring from the root. This species was first discovered in 1819 in the arid prairies of the Red River, in North America, by Professor Nuttall, who gave seeds of it, with the name attached, to Robert Barclay, Esq., Bury Hill, in whose collection it flowered in September 1824. The name of triloba alludes to the petals, which are slightly three-lobed. We do not know where seeds are to be procured of this very singular species.

FLOWERS REDDISH.

13.—*ÆNOTHERA DENSIFLORA*, *Lindl.* THE CLOSE-FLOWERED *ÆNOTHERA*.

SYNONYME.—*Boisduvalia Douglasii*, *Spach*.

ENGRAVING.—*Bot. Reg.* t. 1593.

SPECIFIC CHARACTER.—The whole plant woolly. Leaves linear-lanceolate, sessile, acuminate, toothed. Branchlets with small corymbs

of flowers, rising from the axils of the leaves. Ovary cylindrical, with very short bracteas. Sepals sub-coloured, smooth within. Petals bilobed, obtuse. Stamens four, shorter ones fertile; four longer ones often sterile.—(*Lindl.*)

DESCRIPTION, &c.—This very remarkable plant bears but little resemblance to the other kinds of *Ænothera*, and certainly it has only its singularity to recommend it. The colour of its flowers is a reddish-lilac, or rather dirty rose-colour, and they are so small that they are almost hidden by the leaves. “Its peculiar habit,” says Dr. Lindley, “arises from each of the axillary buds of the main stem, which usually produce a single flower, being developed into a short branch, that itself bears flowers in the axilla of its leaves.”—(*Bot. Reg.* t. 1593.) It is a native of New California, from which country seeds were sent by Douglas in 1831. It ripens seeds abundantly, and they may be purchased at Charlwood’s, and in most other seed-shops. It is quite hardy, and requires no particular care in its cultivation.

14.—*ÆNOTHERA HUMIFUSA*, *Nutt.* THE TRAILING EVENING PRIMROSE.

SYNONYMES.—*Æ. concinna*, *D. Don*. *Boisduvalia concinna*, *Spach*.

ENGRAVINGS.—*Bot. Reg.* t. 1829, and our *fig.* 5, in Plate 8; *Brit. Flow. Gard.* 2nd Series, t. 183; and our *fig.* 11, in Plate 8.

SPECIFIC CHARACTER.—Clothed with hairs. Stem prostrate. Leaves

oval at the base, sharply pointed, toothed. Flower-spikes terminal, and surrounded with leaves. Calyx of the tube slender, and twice as long as the ovary. Petals bilobed, veined, longer than the stamens. Lobes of the stigmas forming a small cross. Capsules prismatic.—(*Lindl.*)

DESCRIPTION, &c.—A pretty little hardy annual with trailing stems, and small hairy leaves. Its flowers are flesh-coloured when exposed to much light, but in the shade they become of a beautiful pink. The tube of the flower is of a deep rose-colour. The species is a native of North America, and was discovered by Dr. Baldwin on the sea coast near Cumberland, in Florida. Introduced in 1824. *Æ. concinna*, *D. Don*, figured in *Sweet’s British Flower Garden*, is supposed to be the same species; but as the two figures are somewhat different, and as Professor Don states that the plant which his figure was taken from, was raised from seeds brought from Chili by Mr. Hugh Cumming, we have copied both figures in our Plate 8. Both names are in Charlwood’s Seed Catalogue.

GENUS II.

GODETIA, *Spach.* THE GODETIA.

Lin. Syst. OCTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Limb of the calyx reflexed. Capsule opening at the angles. Placenta persistent. Stamens all alike. Chalaza of the seed crowned round the margin by a fringe.—(*Spach.*)

DESCRIPTION, &c.—This new genus, as we have already observed, we have followed Dr. Lindley in adopting. It contains all the species with purple flowers, which Dr. Lindley informs us will not mix with the yellow-flowered kinds so as to form hybrids. The two kinds are indeed obviously distinct to the unbotanical observer, not only from the difference in the colour of their flowers, but from the circumstance of the purple kinds not closing up their petals in the sunshine, and thus forfeiting all title to the name of Evening Primrose. The botanical difference is, as we before observed, so minute as to be only perceivable by the aid of a powerful microscope.

1.—GODETIA PURPUREA. THE PURPLE GODETIA.

SYNONYMES.—*Oenothera purpurea*, *Curtis*. *Ce. humilis*, *Don*.
Godetia Willdenowiana, *Spach*.

ENGRAVING.—*Bot. Mag.* t. 352.

SPECIFIC CHARACTER.—Plant glaucescent. Leaves lanceolate, attenuated at both ends, bluish; tube of calyx short. Petals obovate,

crenulated. Stamens and pistil exserted, much shorter than the corolla. Lobes of stigma thick, short, dark purple. Anthers yellow. Capsule ovate, triquetrous, sessile, angular, pilose. Seeds irregularly angular, and covered with dots when examined with a lens.—(*G. Don.*)

DESCRIPTION, &c.—This species grows to the height of two feet; its leaves are of a very glaucous or bluish green, and its flowers of a reddish purple. It is also remarkable for the reddish hue of its stems, and the very dark purple of the lobes of its stigma. It is a native of the north-west coast of North America, whence the seeds were sent to Kew, in 1791. It has always been a favourite in our gardens, and is yet perhaps more common than any of the other purple-flowered kinds. Its seeds are to be procured in every seed-shop; and they should be sown in March, April, or May, according to the time they are wanted to flower. Perhaps the best time to sow them is in April, or the beginning of May, in which case they will flower in June or July, according to the warmth of the season, or the nature of the situation. It may be observed that, though seeds sown in March will certainly be earlier in flower than those sown in April or May, the difference will not be equal to the difference in the time of sowing; that is to say, seeds sown a month earlier will not be in flower more than a fortnight earlier, and in some cases not so much. All the Godetias require a dry soil, not too rich; and indeed the poorer the soil is, the brighter will be the colours of the flowers—though if it be very poor, the foliage will not be good. The seeds may be sown in the manner directed for those of *Flos Adonis*, but not too thin, as many of the seeds are always bad; and besides they are frequently destroyed by insects. When they come up they should be thinned out, so as to leave about five or six plants in every patch of six inches in diameter; and the plants taken out may be transplanted.

2.—GODETIA ROMANZOVII, *Spach.* ROMANZOW'S GODETIA.SYNONYME.—*Oenothera Romanzovii*, *Ledebour*.ENGRAVINGS.—Bot. Reg. t. 562; and our *fig.* 10, in Plate 8.

SPECIFIC CHARACTER.—Glaucous. Stem erect. Leaves lanceolate-oblong, mucronate, tapering into the petiole. Tube of calyx very short. Limb one-half shorter than the corolla. Petals broad-obovate,

crenulated. Stamens much shorter than the corolla. Anthers green. Stigmas nearly sessile, enclosed, dark purple. Capsule oblong-cylindrical, somewhat tetragonal, pilose. Seeds hoary, and rather scaly when examined with a lens.—(*D. Don.*)

DESCRIPTION, &c.—The flowers are small, but of a rich dark bluish colour; and the leaves are of a glaucous hue. The stigma is much shorter than in any of the other kinds, and of so very dark a purple, as to look almost black. The growth of the plant is also rather different from that of the other kinds; the stem is decumbent, but it has numerous “soft, flexile, ascending branches.” This species is a native of the north-west coast of North America, where it was discovered by Chamisso, who found and named the *Eschscholtzia*, during the same voyage. The specific name of this *Godetia* was given in honour of the Russian minister, Count Romanzow, at whose expense the expedition under Captain Kotzebue, with which Chamisso sailed, was sent out. The seeds of the *Godetia Romanzovii* were sent to Moscow in 1817; and soon afterwards some were forwarded to England, and sown in the Botanic Garden, Chelsea, where the plant flowered for the first time in this country in 1820. It is now common in all the nurseries, and its seeds may be had in every seed-shop. It is quite hardy, and only requires the same treatment as *G. purpurea*.

3.—GODETIA DECUMBENS, *Spach.* THE DECUMBENT GODETIA.SYNONYME.—*O. decumbens*, *Doug.*

ENGRAVINGS.—Bot. Mag. t. 2889; Bot. Reg. t. 1221.

SPECIFIC CHARACTER.—Leaves glaucous, quite entire, pubescent,

lower ones broadly ovate; upper ones ovate-lanceolate. Petals emarginate, crenulated. Stigmas purple, with reflexed segments. Capsule bluntly tetragonal, tapering from the base, villous.—(*G. Don.*)

DESCRIPTION, &c.—This species has hairy glaucous leaves, and small purple flowers of no great beauty. It is a native of California, and was introduced by Douglas in 1837. To a botanist it is interesting, because its stigmas differ greatly in form from all its allies; but it is scarcely worth cultivating as an ornamental flower, when so many much handsomer can be procured. Seeds may be had at Mr. Charlwood's; they should be sown, and afterwards treated in the same manner as directed for *G. purpurea*.

4.—GODETIA ROSEO-ALBA. THE ROSE AND WHITE GODETIA.

SYNONYMS.—*G. Lehmannia*, *Spach.* *Oenothera roseo-alba*, *Bernl.* *O. amœna*, *Lehm.*ENGRAVINGS.—Brit. Flow. Gard. t. 268; and our *fig.* 8, in Plate 8.

SPECIFIC CHARACTER.—Pubescent. Stem round. Leaves lanceo-

late, bluntish, slightly toothed, glaucous. Petals three times longer than the calyx, obovate, slightly emarginate, undulately crenated, capsule cylindrically tetragonal. Lobes of stigma semicylindrical.—(*G. Don.*)

DESCRIPTION, &c.—A very beautiful species, with very delicate whitish petals deepening into rose at the base; and each petal marked in the centre with a rich reddish-purple blotch. It is rather remarkable that the native country of this beautiful plant is not known; some botanists supposing it to come from North America, and some

from Nepaul!! The latter appears very improbable, as no other species of the genus has ever been found in India. It was sent to England from Germany, in 1827; and it appears most probable, as is suggested in *Sweet's British Flower Garden*, that it is a hybrid, originated in Germany. *Godetia bifrons*, commonly called *Ænothera bifrons*, is a hybrid raised in the London Horticultural Society's Garden, between *G. roseo-alba*, and *G. Lindleyana*. The seeds of both *G. roseo-alba* and *G. bifrons* are to be procured in every seed-shop; and the plants will require the same culture as directed for *G. purpurea*. Professor Don, in *Sweet's British Flower Garden*, has called another species *Æ. bifrons*, but it is a biennial and has yellow flowers; and besides, we do not know where seeds of it are to be met with. The seeds commonly sold under the name of *Æ. bifrons*, are those of *Godetia bifrons*, the hybrid we have above mentioned.

5.—GODETIA QUADRIVULNERA, Spach. THE FOUR-SPOTTED GODETIA.

SYNONYME.—*Ænothera quadrivulnera*, Dougl.

ENGRAVING.—Bot. Reg. t. 1119.

SPECIFIC CHARACTER.—Stem declinate, branched, weak, puberulous.

Leaves linear-lanceolate, somewhat denticulated, puberulous. Petals with crenulated margins. Capsule tetragonal, attenuated at the apex, villous.—(*G. Don.*)

DESCRIPTION, &c.—A pretty little flower, of a pale lilac, marked with spots of a reddish lilac of a much darker colour. The plant has slender stems, and small leaves. It is a native of the north-west coast of North America, where it was found by Douglas growing on the banks of streams, in 1826. From its delicate habit of growth, it is a very good kind for growing in a pot, as it will become “a dense tuft of stems, about six inches high, which are almost covered with leaves, and elegant lilac flowers.”—(*Bot. Reg.* 1119.) When sown in the open border, it may be treated like *G. purpurea*, but from its low habit of growth it will not require much thinning, as it must be grown in masses to produce a proper effect. This species does well sown in September, either in pots in a slight hotbed, or in the open ground to stand through the winter and to flower early in spring.

6.—GODETIA LINDLEYANA, Spach. DR. LINDLEY'S GODETIA.

SYNONYME.—*Ænothera Lindleyii*, Douglas.

ENGRAVINGS.—Bot. Mag. t. 2832.

SPECIFIC CHARACTER.—Stem ascending, diffuse, branched. Leaves

linear-lanceolate, quite entire, glabrous. Capsules round, elongated, acute, larger than the leaves. Petals entire, two-coloured.—(*Douglas.*)

DESCRIPTION, &c.—A very handsome species of *Godetia*, very closely resembling *G. quadrivulnera*, but with larger flowers, and growing a foot or eighteen inches high. Its capsule is also smooth, instead of furrowed, and its leaves are on short footstalks. It is a native of the north-west coast of North America, where it was found by Douglas in 1826, growing in a dry open situation. It is quite hardy, and if the seeds (which are to be procured in all the seed-shops) are sown in March or April, it will come into flower in June, and will continue flowering till killed by frost. As it requires a dry soil and an open situation, it is not suitable for sowing in small close gardens full of trees, the soil in which is generally rich and damp. It does best in a poor soil; as, where the soil is rich, the colours become so faint as to make the flowers look almost like those of *G. roseo-alba*, or *G. bifrons*.

7.—GODETIA TENELLA, *Spach.* THE DELICATE GODETIA.SYNONYME.—*Oenothera tenella*, *Cav.*ENGRAVING.—*Bot. Mag.* t. 2424.

SPECIFIC CHARACTER.—Stem branched, erect. Leaves linear, spatulate. Petals obovate, rather retuse, violaceous. Style longer than

the stamens, which are erect, but much shorter than the petals. Segments of stigma narrow, short. Capsule furrowed, cylindrical, curved, downy, longer than the bractæas.—(*G. Don.*)

DESCRIPTION, &c.—Rather a pretty species, with glaucous leaves, and purple flowers. It seldom grows more than six inches or eight inches high, and is rather tender, being a native of Chili. It was introduced in 1823. The kind called in the seed-shops *Oenothera tenuifolia*, differs so very little from this species, that it appears only a variety. Both kinds should not be sown till the latter end of April or May, as cold winds would injure the delicate young plants. They will begin to flower in July, and will continue flowering till killed by frost.

8.—GODETIA VIMINEA, *Spach.* THE TWIGGY GODETIA.SYNONYME.—*Oenothera viminea*.ENGRAVING.—*Bot. Mag.* t. 2873.

SPECIFIC CHARACTER.—Stem erect and glabrous, with long, slender,

rod-like branches. Leaves lanceolate, glaucous, entire. Capsules cylindrical, attenuated, furrowed, pubescent.—(*Douglas.*)

DESCRIPTION, &c.—This is a very distinct species. It grows three or four feet high, with a “pale, almost white, and polished” stem, and numerous long slender branches. The flowers are rather large, of a pale purple or lilac, with long yellow anthers, and a deep rich purple stigma. It was found by Douglas in the Californian prairies, flowering in dry situations in April; but in the low moist meadows, near the rivers, it flowered all the summer. In the dry ground, the plant was comparatively small, but its flowers were highly coloured; and in the low moist ground, the plant, though it had paler flowers, grew so large and strong, that Dr. Lindley calls it a sort of woody annual. It was introduced in 1826. It is perfectly hardy, and may be sown at almost any season. If sown in September, it will flower very early in spring, and if sown in spring, it will flower in about two months after sowing. In rich soil, it grows very large and strong, and requires abundance of room.

All these kinds of Godetia are generally called *Oenotheras* in the seed-shops; but the common specific names are the same as those here given. All the purchaser has to do, therefore, in case of any difficulty occurring, is to change the name of *Godetia* into *Oenothera*, when any species is asked for.

9.—GODETIA RUBICUNDA, *Lind.* THE RUDDY GODETIA.ENGRAVINGS.—*Bot. Reg.* t. 1856; and our *fig.* 3, in Plate 8.

SPECIFIC CHARACTER.—Erect. Leaves linear-lanceolate, slightly toothed, green. Petals roundish or wedge-shaped, undulate, of one colour. Alternate stamens less than the others. Anthers of a fiery

red, but yellow at the apex, where they are turned back. Stigmas pallid. Capsules linear, sessile, truncated. Seeds elongated and wedge-shaped.—(*Lindl.*)

DESCRIPTION, &c.—A very showy species, with a branching stem, growing about two feet high, and perhaps the handsomest of all the kinds of Godetia. The flowers are large, and of a glowing ruddy hue, deepening into flame-colour in the centre. The stamens are also flame-colour, recurved and tipped with yellow; and the stigma is large and nearly white. This very handsome flower was introduced by Douglas, who sent its seeds home from California, in 1835. It is quite hardy, and though so recently introduced, its seeds ripen in such abundance, that

they are to be found in every seed-shop. As it is rather tall-growing, it will, in confined situations, look better if tied up than if left loose. It is, however, of a very robust habit; and if allowed plenty of air and room, it will be found strong enough to stand alone.

10.—GODETIA LEPIDA, *Lindl.* THE PRETTY GODETIA.

ENGRAVINGS.—Bot. Reg. t. 1849; and our *fig.* 4, in Plate 8.
 SPECIFIC CHARACTER.—Erect. Leaves ovate-lanceolate, entire. Petals subrhomboid, obtusely denticulated. Stamens one-third shorter than the petals, the alternate ones shorter than the others. Capsules sessile; ovate-oblong, hairy.—(*Lindl.*)

DESCRIPTION, &c.—A pretty flower, a native of California, introduced by Douglas in 1835. It is remarkable for the dark spots on the upper part of its petals, and for the rich dark purple of its stigma; its capsules are short and hairy; and its leaves, which are of a bluish green, are also covered with a kind of down. The plant grows about a foot high; and its seeds may be procured in every seed-shop. It is more suitable for small gardens than *G. rubicunda*, on account of its more compact habit of growth; and where sown in large patches, and each plant after thinning allowed sufficient room to spread, it forms a dense mass of flowers, and is very ornamental.

11.—GODETIA VINOSA, *Lindl.* THE WINE-STAINED GODETIA.

ENGRAVINGS.—Bot. Reg. t. 1830; and our *fig.* 1, in Plate 8.
 SPECIFIC CHARACTER.—Erect. Leaves linear-oblong, subdentated, glabrous. Petals roundish, wedge-shaped, undulated, without blotches; alternate stamens less. Anthers crimson, yellowish at the summit. Tube of the calyx not more than one-third the length of the limb. Seeds of a dark brown and self-coloured.—(*Lindl.*)

DESCRIPTION, &c.—A plant somewhat resembling *G. rubicunda* in its habit of growth, but differing in being much more slender. The flowers are white, slightly tinted with a reddish lilac, as though stained with port wine. It was introduced at the same time as *G. rubicunda* and *G. lepida*; and, like those plants, it is a native of California. All these plants are quite hardy, and very ornamental; and they may all be sown in September to flower early in spring; in March, to flower in May; and in May to flower in July and August. *G. vinosa* requires the same treatment as *G. rubicunda*; but being of a more slender habit of growth, it should always have some support.

GENUS III.

CLARKIA, *Pursh.* THE CLARKIA.

Lin. Syst. OCTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Limb of the calyx 4-parted. Petals 4, tripartite. Capsule 4-celled. Seeds not pappous.

1.—CLARKIA PULCHELLA, *Pursh.* THE FAIR CLARKIA.

ENGRAVINGS.—Bot. Mag. t. 2918; Bot. Reg. t. 1100; and our *fig.* 1, in Plate 9.
 SPECIFIC CHARACTER.—Leaves linear. Petals deeply 3-lobed.—(*G. Don.*)
 VARIETY.—*C. p. 2. alba.* Hort., our *fig.* 2, in Plate 9.

DESCRIPTION, &c.—This pretty annual was first discovered by Captains Lewis and Clarke, in 1803, though it was not introduced into England till 1826. In 1803, when Jefferson was president of the United States, he



1 *Clarkia pulchella* — 2. *Clarkia pulchella* var. *alba* — 3. *Clarkia elegans* —
4. *Clarkia elegans* var. *rosea* — 5. *Clarkia rhomboidea* — 6. *Eucharidium concinnum*.

proposed to Congress to send some competent persons to ascend the Missouri, cross the Stony Mountains, and explore the western part of North America. The persons chosen were, Lewis, who had been two years private secretary to Jefferson, and William Clarke, both of whom received captains' commissions before their departure. The expedition occupied three years, and was very successful; and during the course of it, the *Clarkia* was discovered by Captain Clarke, and dried specimens of it were sent to Pursh, the naturalist, who described and figured it in his *Flora of North America*. No seeds were however collected, and nothing more was heard of the *Clarkia* in England till 1826, when it was again discovered, and seeds of it sent home, by Douglas. It was one of the first Californian annuals imported. The *Clarkias* may be sown like the *Godetias*, in September, March, and May; and they require the same treatment. *Clarkia pulchella* looks very well mixed with mignonette. In this case, the seeds should not be sown in patches, but a bed of rather poor soil should be levelled, and sown all over thinly with *Clarkia*, and then with mignonette. When the plants come up, both kinds should be thinned out so as to leave the plants about two inches apart and not more, all over the bed; and when they come into flower they will form a rich mass, and have a very pretty effect, the bushiness of the mignonette hiding the naked stalks of the *Clarkia*.

2.—CLARKIA ELEGANS, Douglas. THE ELEGANT CLARKIA.

ENGRAVINGS.—Bot. Mag. t. 3592; Bot. Reg. t. 1575; Brit. Flow. Gard. Second Series, t. 209; and our fig. 3, in Plate 9.

SYNONYME.—*Phæostoma Douglasii*, Spach.

VARIETIES.—*C. e. 2. rosea* Hort.; our fig. 4, in Plate 9, has the flowers of a pale brick-red, rather than rose-colour. It is very handsome.

C. e. 3 fl. pl. Hort. has the flowers semi-double.

SPECIFIC CHARACTER.—Leaves ovate, dentated and entire. Stem glaucous and branching. Petals rhomboid, undivided. Stigma pubescent, ovary hairy.—(Lindl.)

DESCRIPTION, &c.—This elegant flower was introduced by Douglas from California, in 1832. It is rather different in its habit from *C. pulchella*, as it produces its flowers on a long raceme; the raceme growing longer, and expanding fresh flowers at the top, as those below drop and give place to ripe capsules. *Clarkia elegans* may be sown in April or May, and will continue in full beauty and continually opening fresh flowers from July to October. Its seeds may be procured at every seed-shop.

3.—CLARKIA RHOMBOIDEA, Doug. THE RHOMBOID CLARKIA.

SYNONYME.—*C. gauroides*, Hort.

ENGRAVINGS.—Bot. Reg. t. 1981; Brit. Flow. Gard., Second Series, t. 379; and our fig. 5, in Plate 9.

SPECIFIC CHARACTER.—Petals entire, rhomboid. Leaves lanceolate. (G. Don.)

DESCRIPTIONS, &c.—This species is easily distinguished from the other kinds by the shape of its petals. It has slender stems, and grows from one foot to two feet high. It was discovered by Douglas at the same time as *C. pulchella*, and his description of it was published in Sir W. J. Hooker's *North American Flora*; but he did not send seeds of it home till his last expedition, and these being found among some of his seed-papers in 1836, they were sown in the Horticultural Society's Garden, and produced flowers. Mr. Douglas discovered another species of *Clarkia* at the same time, of which he was unable to procure seeds, but which he named *C. unguiculata*, the clawed *Clarkia*; this species has not yet been introduced. The seeds of *Clarkia rhomboidea*, under the name of *Clarkia gauroides*, may be had at Charlwood's Covent Garden, Carter's Holborn, and most other seed-shops.

Carter has the names of three other kinds of *Clarkia*, one large-flowered, and two fringed varieties of *C. pulchella*, but we have never heard of them anywhere else, and do not know what they are.

Clarkia rhomboidea, Dr. Lindley observes, "is interesting in a botanical point of view, on account of its flowers indicating the nearest approach yet known among the Onagraccous plants to the indefinite stamens of the *Myrtaceæ*."

GENUS IV.

EUCHARIDIUM, *Fisch. et Mey.*

GENERIC CHARACTER.—Tube of the calyx above the ovary, elongated, filiform, with a four-parted deciduous limb. Petals four, clawed, trifold. Stamens four. Stigma two-lobed. Capsule four-celled, four-valved, dehiscent. Seeds numerous.—(*Fisch. et Meyer.*)

1.—EUCHARIDIUM CONCINNUM, *Fisch. et Meyer.* THE NEAT EUCHARIDIUM.

ENGRAVINGS.—Bot. Mag. t. 3589; Bot. Reg. t. 1962; and our *fig. 6*, in Plate 9.

SPECIFIC CHARACTER.—Pubescent. Leaves petiolate, ovate, entire. Flowers axillary, solitary.

DESCRIPTION, &c.—A pretty and very neat little plant, growing about six or eight inches high, and flowering freely. It was found near the Russian colony of Ross in New California, and sent to the London Horticultural Society from St. Petersburg in 1836. Seeds may be procured of Mr. Charlwood, and at Mr. Henderson's nursery, Pine Apple Place, Edgeware Road, where our drawing was made in the autumn of 1838. The plant, from its neat and compact habit of growth, is well adapted for growing in a pot, or in a small garden, and the seeds may be sown at any period of the spring or summer, as they will generally flower at any time in six weeks after sowing.

GENUS V.

GAURA, *Lin.* THE GAURA.

Lin. Syst. OCTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Limb of calyx 3-4-parted. Petals four. Ovary 3-4-sided, one-celled. Seeds naked.

1.—GAURA TRIPETALA, *Cav.* THE THREE-PETALLED GAURA.

SYNONYME.—*G. hexandra*, *Ortega*.

SPECIFIC CHARACTER.—Leaves lanceolate-linear, a little toothed.

Flowers hexandrous. Sepals three, deflexed. Petals three, rose-coloured, obovate-oblong, unilateral, ascending.

DESCRIPTION, &c.—A half-hardy annual, with whitish flowers, that turn pink as they fade. It is a native of Mexico, introduced in 1804. It is very inferior in beauty to the perennial species of *Gaura*, and is only deserving of cultivation where there is abundance of room. Seeds may be had at Charlwood's. They should be sown in May, and will flower in August.

GENUS VI.

LOPEZIA, *Cav.* THE LOPEZIA.*Lin. Syst.* MONANDRIA MONOGYNIA.

GENERIC CHARACTER.—Limb of the calyx four-parted. Petals four, irregular. Stamens two, only one of which is fertile. Capsule subglobose, four-celled.—(*G. Don.*)

1.—LOPEZIA RACEMOSA, *Cav.* THE BRANCHING LOPEZIA.

ENGRAVING.—Bot. Mag. t. 254.

SYNONYME.—*L. Mexicana*, *Jaeg.*

SPECIFIC CHARACTER.—Leaves alternate, ovate-lanceolate, serrated,

tapering to the base. Racemes terminating the branches. Bracteas much shorter than the pedicels.—(*G. Don.*)

DESCRIPTION, &c.—A slender plant, terminating in a branched raceme of very small pinkish flowers. The petals of the flowers are very narrow, and one of them is darker than the others. The capsules are small and round, and they look rather pretty, hanging like single berries on their long footstalks. The plant is a native of Mexico, and was introduced in 1792. Seeds may be procured in any seed-shop, and if sown in March or April, they will flower in September and October. The *Lopezia* is a dangerous plant to grow in a hotbed, as in that case it is generally attacked by the red spider (*Aearus telarius*).

2.—LOPEZIA CORONATA, *Andr.* THE CROWNED LOPEZIA.

ENGRAVING.—Bot. Rep. 551.

SYNONYME.—*L. Mexicana*; *var. coronata*, *Dec.*

SPECIFIC CHARACTER.—Plant glabrous. Branches angular. Leaves

alternate, ovate, serrated, attenuated at the base. Bracteas exceeding to pedicels.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of this kind of *Lopezia* (which is also a native of Mexico, introduced in 1804) are larger and consequently handsomer than those of *L. racemosa*; but they have the same disadvantages. They are too tender to stand the winter, or bear to be sown very early in spring in the open ground; and if raised in a hotbed, they are almost sure to be attacked by the red spider; which not only destroys the beauty of their leaves, but will infest every other plant in the hotbed. The *Lopezias* are also undesirable plants to grow in a small garden, from the great length of time (generally five or six months) which elapses between the time of sowing the seeds and the flowering of the plants; and from their flowers appearing so very late in the season, that they can only display their beauty a short time before they are destroyed by frost.

CHAPTER VII.

LOASACEÆ.

ESSENTIAL CHARACTER.—Calyx superior, five-cleft. Petals five, cucullate. Stamens perigynous, or partlyadelphous. Styles combined. Placentas parietal. Fruit capsular, or succulent.—(*G. Don.*)

GENUS I.

LOASA, *Adan.* THE LOASA.

Lin. Syst. POLYADELPHIA POLYANDRIA, OR POLYANDRIA MONOGYNIA.

GENERIC CHARACTER.—Tube of the calyx not twisted, limb five-parted. Petals ten; five outer ones cucullate, five inner ones scale-formed, bearing two sterile filaments inside. Outer series of stamens

sterile and free; inner ones disposed in five bundles, but distinct. Capsule one-celled, but three-valved at the apex.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of the plants belonging to this genus are so ornamental, that the plants would be general favourites were it not for their stings, which are much worse than those of the nettle. Great confusion exists respecting the different species of *Loasa*, some botanists giving to almost every species the name of some other species as a synonyme, though the plants, when seen together, appear quite distinct. The fact is, all the *Loasas* assume very different appearances according to the kind of soil in which they are grown. Seeds sown in rich ground produce plants differing not only in the size, but in the colour of the flower, from plants produced by seeds out of the same seed-pods, sown in poor ground; and the specimens thus raised have occasionally appeared so different, that some botanists have taken them for distinct species. It is probable, however, that all the yellow-flowered kinds are varieties of one or two species—probably of *L. nitida* and *L. Placai*—and that *L. alba* is a variety of *L. nitida*. *L. incana* is described by Dr. Graham as a perennial and suffruticose, and therefore we have omitted it in our described species, though we may here mention that its flowers are white, and its leaves covered with a kind of mealiness, which makes them look as though they were powdered. The plant called *Loasa lateritia*, or *L. aurantiaca* in the nurseries and seed-shops, is probably not a *Loasa* at all; or, at any rate, as it is a tall climbing plant, it can hardly be the *Loasa lateritia* described as almost stemless by Dr. Arnott in *Cheek's Edinburgh Journal*. This description was taken by Dr. Arnott from the MS. notes of Dr. Gillies, who was well acquainted with South American plants, as he resided for many years at Mendoza at the foot of the Andes, and thence made frequent excursions across the Cordilleras to the shores of the Pacific on the one side, and across the Pampas to the Atlantic on the other. All the plants belonging to the genus *Loasa* have the tube of the calyx not twisted, but the plant called *Loasa lateritia* has the tube of the calyx twisted, and indeed strongly marked with spiral ribs. These spiral ribs form one of the distinctive marks of the genus *Caiophora Presl*, so that probably the true name of the plant in question may eventually be found to be *Caiophora punicea*,



1. *Rosa Aurantiaca* — 2. *Rosa ambrosinifolia* — 3. *Rosa Placii* — 4. *Plumierbachia insignis* — 5. *Bostonia nivea*

the *Blumenbachia punicea* of Mr. G. Don, and the *Loasa punicea* of Ruiz and Pavon. As, however, the plant is now generally known by the name of *Loasa lateritia* in the seed-shops, and as it has been called so by Dr. Lindley (Bot. Reg. 1838, fol. 22), we shall describe it by that name in the following page.

1.—LOASA NITIDA, Lam. THE SHINING LOASA, or CHILIAN NETTLE PLANT.

ENGRAVINGS.—Brit. Flow. Gard., Second Series, t. 195; Bot. Mag. t. 2372.

VARIETY.—L. n. 2. *tricolor*, G. Don. syn. *L. tricolor*, Bot. Reg. t. 667.

SPECIFIC CHARACTER.—Prostrate. Leaves cordate-lobate, dentated, shining above, upper ones sessile. Peduncles axillary.—(Lam.)

DESCRIPTION, &c.—The flowers of this species are yellow, and the leaves of a bright shining green. The flowers of the variety have rather more red in them, but the difference is very trifling. The stem is covered with long rigid hairs, which have each “a small bag or vesicle at the base, containing the liquor for transfusion through the sting when in action.” This liquid stings severely, and the burning pain it occasions continues generally for a week or ten days, and the red mark often remains for weeks and even months. *Loasa nitida* is a native of Chili, and was introduced in 1822. In its native country it grows wild among rocks; and if grown in England in a poor sandy soil, it will have slender stems, which lie upon the ground, and very richly coloured flowers; but if grown in rich soil, the stem will be strong and upright, and the flowers pale. Seeds of both *L. nitida* and *L. tricolor* are common in the seed-shops; and if sown in the open ground in May, they will flower in July, and continue in flower till September or October.

2.—LOASA PLACEI, Lindl. MR. PLACE'S LOASA.

ENGRAVINGS.—Bot. Reg. t. 1599; and our fig. 3, in Plate 10.

VARIETY.—*L. p. 2 acanthifolia*, syn. *L. acanthifolia*. Ker in Bot. Reg. t. 785.

SPECIFIC CHARACTER.—Leaves cordate at the base, many-lobed,

upper ones sessile. Pedicels axillary. Sepals hardly toothed, reflexed, length of the petals. Wings of the corolla sessile and quite entire, the longest of the stamens as long as the petals. Style bent, longer than the stamens.—(G. Don.)

DESCRIPTION, &c.—A tall strong-growing plant, rising to the height of two feet or more, with a thick, erect stem. It is a native of Chili, and was introduced in 1800. It requires a poor dry soil, and yet abundance of moisture, for the colours to have their full brilliancy. In rich soil the flowers become larger and paler; and the plant assumes the appearance of *L. acanthifolia*. This species is generally raised on a hotbed, and planted out in May; but it may be sown in May in the open ground.

3.—LOASA AMBROSIAEFOLIA, Juss. THE AMBROSIA-LEAVED LOASA.

ENGRAVINGS.—Bot. Reg. t. 1390; and our fig. 2, in Plate 10.

SYNONYMES.—*L. hispida*, Graham. ? *L. bryoniaefolia*, Schrad. ? *L. grandiflora*, Lam.

SPECIFIC CHARACTER.—Leaves alternate, bipinnatifid, lobes bluntish. Pedicels extra-axillary. Lobes of the calyx lanceolate-linear, acute, shorter than the petals.—(Dec.)

DESCRIPTION, &c.—A very handsome, strong-growing species, with large yellow flowers, and a very short ovate seed-vessel. It is a native of Lima, from which country it was introduced in 1829. It grows about two and a half feet high, and may be sown in the open border in May, when it will flower from July to September, and ripen abundance of seeds. The seeds are sold in some of the seed-shops under the name of *L. bryoniaefolia*.

4.—LOASA ALBA, *D. Don*. THE WHITE LOASA.

ENGRAVING.—Brit. Flow. Gard., Second Series, t. 192.

SPECIFIC CHARACTER.—Canescent. Leaves opposite, palmate, toothed.

Calyx in segments, long and linear. Exterior appendages hatchet-formed and awned.—(*D. Don*.)

DESCRIPTION, &c.—A slender-stemmed plant, with white flowers, introduced in 1832, by Mr. Hugh Cuming, from Chili. Seeds of this species are now common in the seed-shops, and like the others, they may be sown in the open border in May.

5.—LOASA LATERITIA, *Hook*. THE BRICK-RED LOASA.

SYNONYMES—? *Calophora punicea* ? *C. cerciifolia* or *C. carduifolia*, *Presl.* ; ? *Blumanbachia punicea*, *G. Don* ; ? *Loasa punicea*, *Ruiz et Pavon* ; *L. aurantiaca*, *Hort.* ; *L. coccinea*, *Hort.*

ENGRAVINGS.—Bot. Mag. t. 3632 ; Bot. Reg. 1838, t. 22 ; and our fig. 1, in Plate 10.

SPECIFIC CHARACTER.—Climbing. Leaves cordate, palmate, lobate. Petals sessile, keeled, and of a brick-red colour. Appendages 3-lobed, truncate ; each furnished, inside, with two membranous bristles. Capsule cylindrical, with spiral ribs.

DESCRIPTION, &c.—A climbing plant, with large dark red flowers and very curiously twisted capsules, which are long and ornamental. It is a native of Tucuman (lying between the Rio de la Plata and the Andes), where it was discovered by Mr. Tweedie, a botanical collector, and seeds of it sent to the Glasgow Botanical Garden in 1836. It was at first supposed to be tender, and grown in a hothouse, but it was soon found to succeed perfectly well in the open border, where it ripened seeds so abundantly as to be now common in every seed-shop. The seeds may either be sown in the open border in May, or in a hotbed in March ; but perhaps the best way for the amateur to procure fine plants, is to purchase, in the month of May, young plants which have been raised by a nurseryman on a hotbed, and are just ready for planting out in the open border. This is indeed perhaps the best method to be pursued by persons, not keeping a regular gardener, with regard to all annuals which should be raised on a hotbed ; as in this manner half-hardy plants may be procured for a mere trifle, compared with the expense and trouble of a hotbed, at the very time when they are wanted.

The *Loasa lateritia* may be trained in many different ways. A plant in Lee's nursery, Hammersmith, which had been raised on a hotbed, and planted out in May, was in August, 1838, a splendid pyramidal mass of flowers six or eight feet high ; it having been trained to three stakes tied together at the top. From this plant our specimen was taken, and the species is called *Loasa aurantiaca* in our Plate 10, from that being the name given to the plant in the Hammersmith nursery. At Mrs. Lawrence's villa, at Drayton Green, it was trained over lattice-work fourteen feet or fifteen feet high. In other places, banks were covered with it, the stems being pegged down in various places to keep them close to the ground ; and in others the plants were drawn through hoops, like those used for Dahlias, and suffered to hang loosely over them. In every case the plant was found to grow vigorously in the open air, and to continue flowering abundantly till killed by frost. It was grown in any common garden soil ; but it was found to thrive best in a sandy loam.

All the kinds of *Loasa* have very showy flowers, and produce a good effect in a garden when trained over a trellis. For this purpose *L. lateritia*, *L. alba*, and *L. nitida*, may be sown at the foot of a low trellis : and as the plants grow they may be trained over it. No lady, however, should attempt to train or gather a *Loasa*, without wearing leathern gloves ; with this precaution, all the plants belonging to the genus are well suited to female culture, as they are easily made to assume any form that may be desired, and their beauty principally depends on the manner in which they are trained. They also amply repay attention in watering, &c., by their increased beauty.

GENUS II.

BLUMENBACHIA, *Schrad.* THE BLUMENBACHIA.*Lin. Syst.* POLYADELPHIA POLYANDRA.

<p>GENERIC CHARACTER.—Tube of the calyx spirally twisted. Limb five-parted. Petals ten; five outer ones cucullate, and the five inner ones scale-formed, each scale enclosing two sterile filaments. Fertile</p>	<p>stamens disposed in five bundles. Fruit dividing into ten parts at the base. (<i>G. Don.</i>)</p>
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1.—BLUMENBACHIA INSIGNIS, *Schrad.* THE SHOWY BLUMENBACHIA.

<p>ENGRAVINGS.—Bot. Mag. t. 2865; Brit. Fl. Gard. t. 171; and our fig. 4, in Plate 10.</p>	<p><i>L. patula</i>, <i>Graham</i>.</p>
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<p>SYNONYMES.—<i>B. parviflora</i>, <i>Gill.</i> <i>Loasa palmata</i>, <i>Spreng.</i></p>	<p>SPECIFIC CHARACTER.—Lower leaves generally seven, but sometimes five lobed, upper ones deeply bipinnatifid.—(<i>G. Don.</i>)</p>
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DESCRIPTION, &c.—The stem is much branched, especially near the bottom, and both stems and branches are thickly covered with bristles, which inflict a slight sting when touched. The leaves are deeply cut, and also clothed with a short pubescence. The flowers are white, and are produced in great abundance. It is a native of Chili and Brazil, and it was introduced in 1826. It will grow perfectly well in the open air, if sown in a rich light soil in May; or in a sheltered situation it may be sown in autumn, to stand through the winter. It flowers in June or July, and continues to unfold its blossoms in succession, till September or October. It is well adapted for raising on a hotbed, and growing in pots, to flower early in the season in a greenhouse, or living room; as it makes a bushy little plant, six inches or eight inches high, and is covered with flowers. Its curious flowers may indeed be seen to best advantage in this way of treating it, as it cannot well be gathered for a nosegay, on account of its stings. It is seldom seen in flower-gardens, though last year (1838) there was a beautiful bed of it in the garden of Thomas Harris, Esq., Kingsbury, from which the specimen for our drawing was obtained. Seeds may be purchased at Charlwood's, Carter's, and other seed-shops. The plant may also be propagated by cuttings, which, if kept through the winter, will flower early the following summer.

2.—BLUMENBACHIA MULTIFIDA, *Hook.* MULTIFID-LEAVED BLUMENBACHIA.

ENGRAVING.—Bot. Mag. t. 3599.

SPECIFIC CHARACTER.—Leaves palmate, with bipinnatifid lobes. Flowers bibracteate. Petals hispid.—(*Hook.*)

DESCRIPTION, &c.—A more vigorous-growing species than *B. insignis*, with larger flowers, and much larger leaves. It was discovered by Mr. Tweedie, in the Pampas of Buenos Ayres, and seeds were sent home by him to the Glasgow Botanic Garden in 1837, when the plants raised from them proved quite hardy, and flowered in the open borders abundantly. The footstalks of the flowers are very long, and though they are erect, the flowers at their extremity bend gracefully. Every part of the plant, however, including the flowers, is covered with hairs, which sting nearly as severely as those of *Loasa*. We have never seen this plant in the gardens near London; and we do not suppose the seed can be obtained anywhere but from the Botanic Garden, Glasgow.

GENUS III.

BARTONIA, *Nutt.* THE BARTONIA.

Lin. Syst. ICOSANDRIA MONOGYNIA.

GENERIC CHARACTER.—Tube of the calyx cylindrical. Limb five-parted. Petals 5-10, about equal in shape. Stamens numerous. Capsule 3-7-valved, each placenta bearing two rows of seeds.—(*G. Don.*)

1.—BARTONIA AUREA, *Lindl.* THE GOLDEN BARTONIA.

ENGRAVINGS.—*Bot. Reg.* t. 1831; *Brit. Fl. Gard.* 2nd Series, t. 357 and our *fig.* 5, in Plate 10.

SPECIFIC CHARACTER.—Leaves ovate-lanceolate, pinnatifid; segments

of the lower ones deeply serrated. Bractees ovate, or pinnatifid. Petals five, obovate, pointed. Filaments numerous, filiform.—(*Lindl.*)

DESCRIPTION, &c.—One of the most beautiful of all the beautiful plants introduced from California by the unfortunate Douglas. This excellent botanist, who was killed a few years since, by falling into a pit placed to entrap wild cattle in the Sandwich Islands, introduced more ornamental annuals than any other collector. The *Bartonia aurea* (which was introduced in 1835) is indeed one of the most beautiful of garden flowers; but “it is only beneath the bright sunshine,” Dr. Lindley observes, “that its splendid flowers unfold. In the early morning, the plant is a shabby bush, with pale, greenish-grey branches, and weedy leaves; but as the sun exercises his influence, the petals gradually unroll, as if in acknowledgment of his power, till every branch is radiant with gold: and so metallic is the lustre of the inside of its petals, that one would really think they must be composed of something more solid and enduring than the delicate and perishable tissue of a flower.”—(*Bot. Reg.* fol. 1831.) This description so admirably depicts the plant, that we could not resist the temptation of quoting it entire. Dr. Lindley adds, that the seeds should be sown in a sheltered situation, as the branches are very brittle, and easily broken by the wind; and that the plants require a rich moist soil. We sowed some seeds, procured from Mr. Charlwood, in a warm rich border, in the open air, in May 1838, taking care to give the young plants plenty of water, and in the latter end of June they were splendidly in flower, producing a succession of blossoms till the plants were killed by the frost. This frost was a very slight one; and though it killed the *Bartonia*, and a *Calandrina* near it, did not hurt even the *Geraniums* (*Pelargoniums*), which were trained against a wall behind the *Bartonia*; while a crimson *Verbena* (*Verbena Tweediana*) lived even after the *Geraniums* were killed. We mention this, to give some idea of the relative degree of hardiness of the plants, though, of course, even this degree will differ greatly in different situations.

2.—BARTONIA ALBESCENS, *Gill. and Arnott.* THE WHITE-STALKED BARTONIA.

ENGRAVING.—*Brit. Fl. Gard.* 2nd Series, t. 182.

SPECIFIC CHARACTER.—Leaves sinuated. Petals scarcely longer than

the calyx. Filaments all dilated. Anthers subrotund, beardless. Stigmata three, separate.—(*D. Don.*)

DESCRIPTION, &c.—A weedy-looking plant, with large, coarse-growing leaves, and very small flowers of a dingy white and yellowish tinge. The plant is a native of Chili, introduced in 1832, and as it requires to be raised on a hotbed, it is not likely to be much grown in flower-gardens in England.

GENUS IV.

SCYPHANTHUS, *Swt.* SCYPHANTHUS.

Lin. Syst. POLYADELPHIA POLYANDRIA.

GENERIC CHARACTER.—Calyx deeply five-parted. Petals five, on short claws. Appendages peltate at the apex, lobed, and three-horned. Stamens numerous, the ten outer ones sterile. Capsule prismatic, silique-formed, crowned by the tube of the calyx, three-valved at the apex.—(*G. Don.*)

1.—SCYPHANTHUS ELEGANS, *Swt.* THE ELEGANT SCYPHANTHUS.

ENGRAVING.—Brit. Flow. Gard. t. 238.

SPECIFIC CHARACTER.—Stem dichotomous. Segments of leaves obtuse, ciliated.—(*G. Don.*)

DESCRIPTION, &c.—A climbing, or rather twining plant, with long slender stems, forked at every joint, and twisting round each other, or round anything within their reach. The flowers are yellow, and curiously formed, but not very beautiful. It is a native of Chili, and would require to be raised on a hotbed; but it was lost soon after its introduction in 1827, and we have not heard of its having been re-introduced.

CHAPTER VIII.

CRUCIFERÆ.

ESSENTIAL CHARACTER.—Sepals four. Petals four, cruciate. Stamens six, hypogynous, tetradynamous. Fruit a silique, or silicle, rarely a valveless pericarp.—(*G. Don.*)

DESCRIPTION, &c.—The Cruciferous plants are easily distinguished from all others by the four petals, of which their single flowers consist, being always placed in such a manner as somewhat to resemble a Maltese cross; and hence they take the name of Cruciferous, which signifies cross-bearing. To this order belong several of our commonest vegetables; for example, all the cabbage tribe, turnips, mustard and cress, radishes, &c. All the Cruciferous plants abound in nitrogen; and hence, when they decay, they not only emit an unpleasant odour like that of decaying animal matter, but they are equally injurious to the health. Some years ago a fever was occasioned at Cambridge, by a number of cabbages being left above-ground, in a confined space, to rot. None of the plants belonging to this order are poisonous; on the contrary, most of them are considered wholesome and antiscorbutic. The roots of some, such as the horse-radish, are pungent, but none of them are injurious.

The most interesting characteristics of the order, as regards the annual flowers belonging to it, are—that the plants are generally tap-rooted, like the radish, and therefore do not bear transplanting well; that they are nearly all natives of the temperate zones, and therefore tolerably hardy; that their seeds retain their vegetative

power for a long time, and therefore that nearly all the seeds that are sown are likely to produce plants; and lastly, that from the quantity of nitrogen they contain, they want food which produces it, and therefore they require nourishment with animal manure. These are all very important points to be kept in view by the grower of Cruciferous annuals—the first shows that the seeds should be sown where they are to remain, or, if transplanted, that a ball of earth should be kept round their roots; the second, that they may be sown safely in the open air; the third, that the seeds need not be sown very thick; and the fourth, that they will require a rich soil, well manured.

GENUS I.

MATHIOLA, *R. Br.* THE STOCK.

Lin. Syst. TETRADYNAMIA SILIQUOSA.

GENERIC CHARACTER.—Siliques somewhat cylindrical. Stigmas connivent, thickened or horned on the back. Calyx bisaccate at the base.—
(*G. Don.*)

DESCRIPTION, &c.—The splendid flowers called stocks, and stock-gilliflowers, are too well known to require description. Most of the kinds are biennial, or shrubby; and, indeed, almost the only annual kind known in British gardens, is the common ten-week stock (*Mathiola annua*), and its varieties. The stocks were formerly included in the genus *Cheiranthus* (the wall-flower), but they were separated from it by Dr. Brown, principally on account of a difference in the formation of the stigma.

1. MATHIOLA ANNUA, *Sweet.* THE ANNUAL OR TEN-WEEK STOCK.

ENGRAVINGS.—*Figs.* 1, 2, 3, and 4, in our plate 11.

SYNONYMES.—*Cheiranthus ineanus*, *Lin.* *Mathiola incana* var. *R.*
Br. *Hesperis æstiva*, *Lom.*

VARIETIES.—There are perhaps few species of which there are more varieties. Some of the single kinds are white, some striped (see *fig.* 1, in Plate 11), some spotted, some purple, and some crimson; and of the double kinds the variety is still greater. The double-flowered purple (*fig.* 2), and the double white (*fig.* 3), are particularly beautiful. Some of the kinds called German stocks are very curious, particularly the brick-red variety (*fig.* 4). Besides these, there are among the double kinds, the crimson, the blush, the pink, the scarlet, the lilac, the rose-

coloured, the brown, and the brown-purple. Seeds of all these kinds, and of many intermediate shades, may be purchased in the seed-shops. Upwards of sixty sorts were grown for many years in the Hammersmith nursery, including what are called Russian, Prussian, and German stocks; perhaps the most curious are those striped with three distinct colours—white, purple, and crimson; and perhaps the handsomest the common double crimson. The new giant stock is a very tall, strong-growing variety, with enormously large flowers.

SPECIFIC CHARACTER. Stem erect, branched. Leaves lanceolate, blunt, hoary. Pods somewhat cylindrical, without glands. (*G. Don.*)

DESCRIPTION, &c.—A plant growing from one to two feet high, with an erect branching stem, hoary leaves, and long spikes of flowers; the size and richness of colour of these flowers vary greatly in the different varieties, and some of them are very splendid. The species is a native of the South of Europe by the sea-shore, whence it was introduced in 1731; but the principal varieties have been originated in England and Germany. The German varieties are particularly beautiful; and the seed saved in that country, from the greater heat of the



1. *Malcomia annua* var. *striata* — 2. *Malcomia annua* var. *purpurea* fl. pl. — 3. *Malcomia annua* var. *alba* fl. pl.
4. *Malcomia annua* var. *litoralis* fl. pl. — 5. *Malcomia maritima*.

summers, and the great care bestowed by the weavers of Saxony, who are the principal growers of it, is very superior to seed saved in England. What are called the Russian and Prussian varieties, are, generally speaking, all grown in Upper-Saxony by the weavers, who take as much pleasure in growing and saving the seed of their stocks, as the Lancashire weavers do in England in growing their pinks and carnations. Home-saved seed can rarely be depended upon, as, where several varieties are grown near together, spurious varieties are made by the wind carrying the pollen from one plant to another, and the seed can never be kept true. Regular seed-growers preserve only the plants with the best flowers, and throw the other plants away. Russian and Prussian stocks were so called because they were introduced about the time of Bonaparte's retreat from Moscow, when the names of Russia and Prussia were fashionable.

The best seed for the German stocks is said to be procured at Carter's, Holborn; but very good may be had at Lee's (from which nursery we have had sixty distinct kinds), Charlwood's, and Forrest's, Kensington.

To produce the finest flowers, the seed should be sown in August, in a bed of rather light soil, which should be covered with a frame; or the seed may be sown in pots, four or five in a pot, and placed in a cold frame. A cold frame means a pit or frame covered with glass, but not heated by manure, or in any other manner. The plants, when they come up, should be kept dry during the winter, to strengthen them, and prevent them from damping off, and in April they should be taken out of their beds, with a ball of earth round their roots, or, if in a pot, turned out with the ball entire, and planted in a warm border, in very rich soil. The poor soil that they were raised in will have previously checked their growth; but planting them in the rich soil after this previous check, will make them grow luxuriantly, and produce rich spikes of flowers in June.

Those persons who wish to have fine stocks to flower early in the summer, but who have not a frame to raise them in, or indeed do not like to be troubled with keeping any plants during winter, will find it their best plan to purchase young plants in April or May from a nurseryman, and to plant them in rich soil where they will flower as above stated. These autumn-sown plants have, however, the disadvantage of fading very soon, when exposed to the heat of summer. Their fibrous roots wither, and their dark colours become blotched, or blanched by the sun. The dark purple, in particular, is very apt to become streaked or spotted with white. From this disadvantage, spring-sown plants are free. If sown in February, March, or April, in a dry poor soil, they may be transplanted into a rich soil in April or May, taking care to preserve earth round the roots, and not to injure the fibres, though in some cases the extreme point of the tap-root may be taken off, to induce it to throw out more fibres. Other seeds may be sown in May, which will not need transplanting, and which, if preserved from the frost, will continue flowering till Christmas.

Some persons, to make the plants produce larger flowers, take off the side shoots as they appear, and thin the blossom-buds on the spike of flowers by taking off every alternate bud; and others water with liquid manure, &c., to produce fine plants. In whatever manner they are treated, it must always be remembered that they require great care in transplanting, and that they should be transplanted when quite young. The general rule is, that plants are fit for transplanting when they have opened their second pair of leaves; and that the transplanting should not be delayed longer than a little after they have produced their third pair. When large plants are removed, it should always be with such a ball of earth attached, that the roots may experience no check from the removal. When the stocks are planted out in the borders for flowering, they are generally placed three together in an angular form, so as to allow room for a stake to be placed in the centre to tie them to, if necessary.

2.—*MATHIOLA GRÆCA*, *Swt.* THE SMOOTH-LEAVED ANNUAL, OR GRECIAN STOCK.SYNONYME. *Cheiranthus Græcus*, *Juss.*

SPECIFIC CHARACTER.—Leaves green, smooth. Pods somewhat compressed.

DESCRIPTION, &c.—This kind differs from the common kind in having the leaves smooth and green instead of hoary. The flowers are purple. It is a native of Greece, and has been long in cultivation in British gardens. Its culture is the same as that of *M. annua*.

3.—*MATHIOLA TENELLA*, *Dec.* THE SLENDER ANNUAL STOCK.

SPECIFIC CHARACTER.—Stem erect, almost simple. Leaves oblong, sinuately-toothed, drawn out at the base, canescent with stellate pubescence. Siliques pubescent, without glands.—(*G. Don.*)

DESCRIPTION, &c.—A slender-stemmed plant, differing from the other annual stocks, in having its stem without branches. Its flowers are of a livid purplish brown, like those of the night-smelling stock (which is shrubby). The slender annual stock is a native of Cyprus, and was introduced in 1820. There is another kind with livid flowers (*M. livida*, *Dec.*), which has a branched stem, and is a native of Egypt, and was also introduced in 1820; but these kinds, and several others made species by botanists, are seldom, if ever, to be purchased under their botanical names, but are sold as different kinds of *M. annua*.

GENUS II.

MALCOMIA, *R. Br.* THE VIRGINIAN STOCK.*Lyn. Sys.* TETRADYNAMIA SILIQUOSA.GENERIC CHARACTER.—Silique roundish. Stigma simple, ending in a long taper point.—(*G. Don.*)

DESCRIPTION, &c.—The Virginian stocks are little free-growing annuals, which were formerly included in the genus *Cheiranthus*, but which have been separated by Dr. Brown on account of a slight difference in the shape of the stigma.

1.—*MALCOMIA MARITIMA*, *R. Br.* THE COMMON, OR SEA-SIDE VIRGINIAN STOCK.

SYNONYMES.—*Cheiranthus maritimus*, *Lin.* *Hesperis maritima*,
Lam.

ENGRAVINGS.—*Bot. Mag.* t. 166; and our *fig. 5*, in Plate 11.

SPECIFIC CHARACTER.—Stems erect, branched. Leaves elliptical,

blunt, entire, narrowed at the base. Hairs appressed 2-or 4-parted. Pedicels somewhat shorter than the calyx. Pods pubescent, furnished with a long acumen at the apex.—(*G. Don.*)

DESCRIPTION, &c.—The pretty little Virginian stock is so well known for its lively-looking flowers, and from its growing so freely wherever it is sown, that it requires very little description. The flowers are of a pale violet or lilac, varying to white, and there is a variety, the flowers of which are of a pure white. It is a native of the South of Europe, growing in the sand close to the sea-shore; and it was introduced in 1713. Why it is called



1 *Iberis umbellata*. — 2. *Iberis umbellata* var. *sanguinea*. — 3. *Iberis umbellata* var. *alba*.
4. *Iberis pinnata*. — 5. *Iberis coronaria*.

Virginian, has never been explained; and it seems a very inappropriate name, as the plant is not found wild in America. It may possibly, however, be a corruption of Virgin's Stock, the easiness of its culture rendering it fit for the care of young girls; in the same way as the Garden Rocket was formerly called Dame's Violet. Nothing can be easier than the cultivation. The seeds are generally all good, and wherever they are sown they will come up without any care being bestowed upon them. It is frequently used in cottage gardens as a border flower.

MALCOMIA CHIA, *Dec.*,

differs very little from the common kind, except in having much smaller flowers. It is a native of the isle of Chio, and was introduced in 1732.

MALCOMIA AFRICANA, *R. Br.*

This species is a native of the south of Europe, and north of Africa, whence it was introduced in 1747. The flowers are small and purplish; the leaves lanceolate; and the pods scabrous.

MALCOMIA ARENARIA, *Dec.*

A native of the sandy plains of Mauritania, whence it was introduced in 1804. The flowers are violet-coloured, and the leaves long and narrow. Seeds of all these kinds may be procured in the seed-shops; but *M. maritima* is the only kind worth growing.

GENUS III.

IBERIS, *Lin.* THE CANDY TUFT.

Lin. Syst. TETRADYNOMIA SILICULOSA.

GENERIC CHARACTER.—Two outer petals largest. *Silicle* much compressed, truncately emarginate.—(*G. Don.*)

DESCRIPTION, &c.—The plants of this genus were called Candy Tuft, because their flowers are produced in tufts, and because *Iberis umbellata*, the first kind introduced as a garden flower, was brought from Candia. The English species, *Iberis amara*, was long thought to be a species of *Thlaspi*, or wild mustard. The seeds of the Candy Tufts are all very pungent, and were formerly used for mustard; and the leaves and young stems both of the Candy Tufts and stocks may be boiled and eaten as pot-herbs.

1.—IBERIS UMBELLATA, *Lin.* THE COMMON PURPLE CANDY TUFT.

SYNONYMES.—*Iberis corymbosa*, *Manch.* *Thlaspi Umbellatum*, *Crantz.*

ENGRAVINGS.—*Bot. Mag.* t. 106; and our *fig. 1*, in Plate 12.

VARIETIES.—I. u. 2 *alba*, *fig. 3*, in Plate 12, only differs from the species in having white flowers. I. u. 3 *sanguinea*, *fig. 2*, in Plate

12, has the flowers much larger than the species, and of a rich dark crimson.

SPECIFIC CHARACTER. Smooth. Leaves lanceolate, acuminate, lower ones serrated, upper ones quite entire; pods umbellate, very acutely 3-lobed.—(*G. Don.*)

DESCRIPTION, &c.—The Purple Candy Tuft is a plant growing to the height of about a foot, with spreading branches and large heads of purple flowers. The white and dark crimson varieties only differ in the size and

colour of their flowers, and the latter kind has been grown to nearly three times the size of the specimen represented in *fig. 2*, in Plate 12. The species is a native of Candia, from which country seeds were brought of it to England by Lord Edward Zouche, about 1590, and given by him to Gerard, who grew it in his garden in Holborn. It was, as we have before mentioned, at first supposed to be a kind of wild mustard, and was called Candia mustard, but when it flowered it excited great admiration. From that time to the present, Purple Candy Tuft has been a general favourite in British gardens; and it well deserves to maintain its place there, from its beauty and the easiness of its culture.

The Purple Candy Tuft, though it is generally found in a wild state on rocks in sunny places, like all the rest of the Cruciferae, does best on a rich soil, if not too moist; and, as it will not bear transplanting without serious injury, it should be sown where it is to remain. As it looks well in masses, it may be sown in square beds, mixed with mignonette, as directed for the Clarkias (p. 57); or, a row may be sown at the back of a border, and smaller flowers planted or sown in front of it. It may be sown in autumn, or in February, March, April, or May; and in warm sheltered situations in June and July, when it will, if protected from frost, remain in blossom all the winter. When it is wished to have the flowers very fine, the seed should be sown rather thinly in August or September; and when the plants produce their second pair of leaves, they should be thinned out. They should be kept rather dry during the winter, and, where convenient, protected from severe frost. In spring, as soon as the plants begin to grow, they should be thinned again, and a third time when they begin to branch. After this they should be watered with liquid manure, taking care not to let the liquid touch the plants, but to let it sink into the ground, so as to afford nourishment to the roots. When the plants are going into flower, the heads should be examined, and if they appear too numerous, the weakest should be removed. By this treatment, and occasionally loosening the ground round the plants, and keeping it free from weeds, flowers of the common Purple Candy Tuft have been grown three inches across, most beautifully coloured, being of a very dark purple on the outside, and softening to nearly white in the centre; and flowers of the dark crimson variety have been grown nearly four inches across. The great points are, thinning the plants gradually as they increase in size, and supplying their roots with abundance of rich food when they are going into flower.

Spring-sown flowers never attain so large a size as those sown in autumn; but, by the same mode of treatment, much finer flowers may be grown than those usually seen in our gardens.

2.—IBERIS PINNATA, *Lin.* THE PINNATE-LEAVED CANDY TUFT.

SYNONYME.—*I. odorata*, *Hort.*

ENGRAVING.—Our *fig. 4*, in Plate 12.

SPECIFIC CHARACTER.—Leaves pinnatifid; racemes corymbose, but after flowering a little elongated.—(*G. Don.*)

DESCRIPTION, &c.—A rather low-growing plant with white flowers and pinnate leaves; the calyxes are slightly tinged with purple. The heads of flowers are generally somewhat raised in the centre, as if approaching the shape of a raceme; and the flowers have occasionally a tinge of purple, or pinkish hue. This species is generally grown and sold under the name of *I. odorata* in the nurseries, but it is very slightly sweet-scented, and very frequently not at all. The species is a native of Spain, from which country it was introduced a few years later than *I. umbellata*, by the same Lord Edward Zouche; and Gerard had both species growing in his garden in 1596. *I. pinnata* was called Spanish Tuft, because it came from Spain, as *I. umbellata* was called Candy

Tuft, because it came from Candia; and under these names we find both species frequently mentioned by our early florists. The name of *Iberis* is derived from Iberia, the ancient name for Spain. *I. pinnata* is also found wild in the south of France and Italy. It requires no particular care in its culture, and it may be sown in March, April, or May. The heads of flowers do not become broader under careful culture, but have a tendency to elongate; so that their beauty, instead of being improved, is rather lessened.

3.—*IBERIS ODORATA*, *Lin.* THE SWEET-SCENTED CANDY TUFT.

ENGRAVING.—Brit. Flow. Gard. t. 50.

SPECIFIC CHARACTER.—Leaves linear, toothed, ciliated at the base, | dilated at the top; pods roundish, emarginate, lobes acute, spreading, | shorter than the style.—(*G. Don.*)

DESCRIPTION, &c.—This species is frequently confounded with *I. pinnata*, but though there is a general resemblance, there are several points of difference. The flowers of *I. odorata* are whiter, and smaller and looser, than those of *I. pinnata*, and its calyxes are more purple; its stem-leaves are only toothed, and its pods are acutely lobed; its leaves are bordered with hairs, and it is very sweet-scented. It grows about a foot high. The small size and looseness of its heads of flowers, and its straggling habit of growth, prevent it from being considered ornamental, and it is comparatively but little grown. It is a native of Crete, and was introduced in 1804. It requires no particular care in its culture, but does best in a rather poor soil, as, in this case, the scent of its flowers is stronger; though this is perhaps no recommendation, as it is of rather a sickly sweetness, and not very agreeable. The seed ripens abundantly, but we do not know where it is to be procured true; as that generally sold in the seed-shops for *I. odorata* is the seed of *I. pinnata*.

4.—*I. AMARA*, *Lin.* THE BITTER CANDY TUFT.

ENGRAVINGS.—Eng. Bot. t. 52.

SPECIFIC CHARACTER.—Leaves lanceolate, acute, somewhat toothed. | Flowers corymbose, finally racemose. Pods orbicular, narrowly emar- | ginate.—(*G. Don.*)

DESCRIPTION, &c.—A little plant about six inches high, with small tufts of white flowers, which have a tendency to form racemes. It is a native of England, and is found in considerable quantities in corn-fields, near Henley in Oxfordshire, Wallingford in Berkshire, and other places. It is also found wild in corn-fields in nearly every part of Europe. It is a pretty little plant, and looks well in a garden, from its low and compact habit of growth, and from the whiteness of its heads of flowers, which, though not large, are very numerous. The whole plant has a bitter taste, from which it takes its name.

5.—*IBERIS CORONARIA*, *D. Don.* THE ROCKET CANDY TUFT.

ENGRAVINGS.—Brit. Flow. Gard., Second Series, t. 359; and our *fig. 5*, in Plate 12.

SPECIFIC CHARACTER.—Pubescent. Leaves wedge-shaped, obtusely- | dentated. Pods corymbose, acutely 2-lobed, margins gnawed, crenated. | Seeds winged. Stem strictly branched.—(*D. Don.*)

DESCRIPTION, &c.—By far the most splendid of the genus. The plant, if carefully treated, grows about two feet high, branching widely, and each plant producing three or five racemes of flowers, the side ones being eight

or ten inches long, and the centre one ten inches or a foot. Large as these dimensions may seem, they are by no means uncommon. A plant grown in a pot, which was exhibited in Charlwood's shop in the summer of 1838, was considerably larger; and there was a bed of these flowers at Claremont, (grown by the late gardener there, Mr. M'Intosh,) not one of which was less than the size we have mentioned, and some were much larger. These plants were treated in the manner already directed for *Iberis umbellata*, being sown in August or September, and gradually thinned out six or seven times till the plants were left a foot and a half, or two feet asunder, so as to allow them to be as near each other, when fully spread out, as they could be without touching. It is rather curious that but little is known of the history of this splendid plant. The only British botanical periodical in which it has been figured, is *Sweet's British Flower Garden*; and this was in 1836. In the description annexed to the figure, it is not stated of what country it is a native, or when it was introduced; but it is suggested that it is probably a hybrid between *Iberis Lagascana* (to which it is nearly allied) and some other species. It appears, however, to have been long in cultivation in France, as it is mentioned in the *Bon Jardinier* for 1831, as a variety of *I. umbellata*, and as being then cultivated by M. Vibert, a Parisian nurseryman. The French call it *Iberide Julienne*, literally, the Rocket Candy Tuft.

OTHER KINDS OF IBERIS.

The following kinds have all been introduced, but as they are seldom grown in gardens, or sold in seed-shops, we have not thought it necessary to give lengthened details respecting them.

6.—*I. SPATULATA*, Berg., *I. COMOSA*, Willd., *I. ROTUNDIFOLIA*, Lam.

A native of the Pyrenees, in calcareous stony places, irrigated at certain seasons by the melting of the snow. The plant grows about six inches high, and the flowers are purplish. It was introduced in 1820.

7.—*I. VIOLACEA*, R. Br.

A very dwarf plant, with violet-coloured flowers; introduced in 1782, but its native country unknown.

8.—*I. LAGASCANA*, Dec.

A native of the mountains of Spain, resembling *I. coronaria*, but with much smaller flowers. Introduced in 1822.

9.—*I. PYRENIACA*, Lapey.

A native of the Pyrenees, with white racemose flowers, probably the same as *I. Lagascana*, or a variety of that species. It grows a foot high, with an erect, branched, reddish stem.



1. *Viscaria grandiflora*. — 2. *Viscaria gracilis*. — 3. *Streptanthus obtusifolius*. — 4. *Streptanthus Hyacinthoides*.
 5. *Schizopetalon Walkeri*. — 6. *Heliophila stricta*. — 7. *Heliophila Thalicoides*. — 8. *Arabis verna*.
 9. *Alyssum calycinum*

GENUS IV.

ARABIS, *L.* THE WALL-CRESS.*Lin. Syst.* TETRADYNAMIA SILIQUOSA.GENERIC CHARACTER.—Siliqua linear; valves flat, with a nerve in the middle of each. Seeds in one row in each cell.—(*G. Don.*)1.—ARABIS VERNA, *R. Br.* THE SPRING WALL-CRESS.SYNONYMES.—*Hesperis verna, L.* *Arabis violaceæ, Mæsch.* *Turritis purpurea, Lam.*ENGRAVINGS.—*Bot. Mag.* t. 3331; and our *fig.* 8, in Plate 13.SPECIFIC CHARACTER.—Stem leaves cordate, clasping the stem, toothed, scabrous with 3-parted hairs. Pedicels shorter than the calyx. Stigma somewhat emarginate.—(*G. Don.*)

DESCRIPTION, &c.—A pretty little annual, with very bright purple flowers, which are whitish in the centre. It is common in the South of Europe, particularly near Naples; where its tufts of flowers, which are produced in great abundance in March, have a very good effect. It was first introduced in 1710; but having been long lost, it was re-introduced by Professor Tenore, of Naples; who sent seeds of it to the Glasgow Botanic Garden in 1833. The name of this species is in most nurserymen's catalogues; but we have never been able to get the seeds.

OTHER KINDS OF ARABIS.

The other annual species of *Arabis* are seldom grown in gardens, though they are generally found in seedsmen's catalogues; we shall therefore say only a few words on each.

A. STENOPETALA, *Willd.*

A native of Kamtschatka, introduced in 1826. The flowers are white, with very long petals.

A. UNDULATA, *Link.*

A native of the South of Europe; somewhat resembling the common wall-cress of the gardens, *A. albida*.

A. THALIANA, *L.* SISYMBRIUM THALIANUM, *Hook.* COMMON THALE CRESS.

A native of Britain. A very pretty delicate little white flower, found generally on walls or cottage roofs, or on banks of dry gravelly soil.

A. PENDULA, *L.*

A native of Siberia, but found also in North America; introduced in 1752. This species has white flowers, and drooping pods.

GENUS V.

KONIGA, *R. B.* THE SWEET ALYSSUM.*Lin. Syst.* TETRADYNAMIA SILICULOSA.GENERIC CHARACTER.—Silicle sessile, somewhat ovate, with flattish valves, and one or many-seeded cells. Funicle adnate to the base of the dissepiment. Seeds usually marginate. Calyx spreading. Petals quite entire. Filaments toothless.—(*G. Don.*)1.—KONIGA MARITIMA, *R. Br.* THE SEA-SIDE KONIGA, OR SWEET ALYSSUM.SYNONYMES.—*Alyssum calycinum, Hort.* *A. halimifolium, Curtis.* *A. maritimum, Lam.* *Lepidium fragrans, Willd.* *Glyce maritima, Lindl.* *Clypeola maritima, Lin.* *Lobularia maritima, Desf.*ENGRAVINGS.—*Bot. Mag.* t. 101; *Eng. Bot.* 2nd. Edit. vol. v. t. 919; and our *fig.* 9, in Plate 13.SPECIFIC CHARACTER.—Cells 1-seeded.—(*G. Don.*)

DESCRIPTION, &c.—Perhaps no plant had ever more botanical names than this; and as it is generally called *Alyssum calycinum* in the nurseries, we have given it that name on our plate; though we have here adopted

the name now generally applied to it in botanical books. It is also frequently called *Alyssum halimifolium* in the nurseries. The genus Koniga was separated by Dr. Brown from that of *Alyssum*, on account of the stamens being toothless, instead of toothed like the other kinds of *Alyssum*, the petals entire instead of emarginate, and some other slight differences, only to be detected by the eye of a botanist. It is a pretty little plant, very hardy, and the seeds are generally so good, that every one sown will come up. This renders it very suitable for making edgings to beds in gardens. It is also very sweet, having a fragrance like new hay. It is found wild on the shores of the Mediterranean, where it becomes shrubby; and it has been found (either wild or naturalised) on cliffs and stony places near the sea, in Aberdeenshire, Devonshire, and Cornwall. There are two varieties of it; one a native of the Canary Islands, and the other with variegated leaves, both of which are grown in England as greenhouse shrubs. It may be sown in March, April, or May, in the open borders; and will continue in flower from July to September. Seeds may be obtained at any seedsman's.

GENUS VI.

VESICARIA, *Lam.* THE VESICARIA.

Lin. Syst. TETRADYNAMIA SILICULOSA.

GENERIC CHARACTER.—Silicle globose, inflated; valves hemispherical. Seeds numerous, more than 8. Petals entire.—(*G. Don.*)

1.—VESICARIA GRANDIFLORA, *Hook.* THE LARGE FLOWERED VESICARIA.

ENGRAVINGS.—Bot. Mag. t. 3464; and our *fig. 1*, in Plate 13.

SPECIFIC CHARACTER.—Stellately pubescent. Stem erect, flexible. Leaves oblong. Root-leaves subulate, pinnatifid, petiolated. Stem-leaves sinuately-dentate, and sessile. Racemes elongated, and many-

flowered. Petals rounded, spreading, with very short claws. Pod partly surrounded by a membrane, globose, very smooth, containing 4—6 seeds, larger than the style. Stigma capitate.—(*Hook.*)

DESCRIPTION, &c.—A very showy flower, discovered in Texas, Mexico, by M. Berendieri, in 1828. No seeds were then sent to Europe; but in 1834, it was again discovered by Mr. Drummond, from whom seeds were received at the Glasgow Botanic Garden, in 1835. It is a handsome plant, with brilliant yellow flowers. The seed-pods are curious, as they look like little globes, or rather bladders; and it is from this bladdery appearance of the seed-pods, that the genus takes the name of *Vesicaria*. This is a valuable plant for flower-gardens, from the great abundance of its flowers, their brilliant colour, and their long duration. The raceme will also continue elongating, and fresh buds opening at the summit, while below, where the petals have dropped, they have been succeeded by the globe-like seed-pods. The size of the flowers may be greatly increased by rich soil and cultivation; and under favourable circumstances, the raceme has been known to grow from eight or ten inches to a foot long. The stems are generally so weak as to require support, and as there are frequently several from the same root, the plant may be trained so as to form a large and handsome bush. The species having only been introduced in 1835, is yet rather scarce; but seeds may be procured from Mr. Charlwood, and at the principal seed-shops.

2.—VESICARIA GRACILIS, *Hook.* THE SLENDER VESICARIA.

ENGRAVINGS.—Bot. Mag. t. 3533; and our *fig. 2*, in Plate 13.

SPECIFIC CHARACTER.—Many-stemmed. Stalks filiform, rigid, scabrous. Leaves lanceolate, entire or subangulate, lower ones sub-

spathulate, petioles entirely bare. Raceme elongated. Petals spreading, obovate, almost sessile. Silicles globose, membranaceous, very smooth, and four-seeded. Style capitate.—(*Hook.*)

DESCRIPTION, &c.—A light graceful plant, with very slender thread-like stems, and small bright yellow flowers, which are produced in succession nearly all the summer; and which are succeeded by very small, and

quite round seed-pods. The stems are so very small and weak, that they lie on the ground if not supported; and this habit makes the plant very suitable for rock-work. It was discovered in Texas at the same time as *V. grandiflora*, and its seeds were sent home by Drummond with those of that species in 1835. Seeds may be procured at Charlwood's.

GENUS VII.

STREPTANTHUS, *Nutt.* THE STREPTANTHUS.*Lin. Syst.* TETRADYNAMIA SILIQUOSA.

GENERIC CHARACTER.—Sepals of the calyx erect, acuminate, coloured, saccate at the base. Filaments of the stamens awl-shaped and short. Anthers, elongated, acuminate. Siliques very long, 4-sidedly com- pressed. Seeds in one series, compressed, marginate. Cotyledons lying down. Flowers purplish.—(*Hook.*)

DESCRIPTION, &c.—A new genus of hardy and very ornamental plants, natives of North America; the only species yet discovered of which are annuals. They are very unlike most other cruciferous plants in their flowers, but agree with them in their long siliques or seed-pods. They bear considerable resemblance to the genus *Moricandia*; but on examination it will be found that the sepals of the calyx are hollow, or what botanists call saccate, at the base, and that the petals have very long claws, each of which has a peculiar twist. This twist is alluded to in the name of the genus, which is combined of *strepho*, to twist or turn, and *anthos*, a flower. The species, from which the genus was constituted by Nuttall, in North America, is called *Streptanthus maculatus*, and has not yet been introduced into England.

1.—STREPTANTHUS OBTUSIFOLIUS, *Hook.* THE BLUNT-LEAVED STREPTANTHUS, OR THE ARKANSAS CABBAGE.

ENGRAVINGS.—Bot. Mag. 3317; and our *fig.* 3, in Plate 13.

SPECIFIC CHARACTER.—Leaves elliptic, very obtuse; deeply two-lobed at the base; stem-clasping.—(*Hook.*)

DESCRIPTION, &c.—A showy plant with rose-coloured flowers, having each a very dark red spot at the base. The calyx leaves or sepals, which are of the same colour as the petals, are sharply pointed, and swell out below, so as to give the flower a very singular shape. The leaves are of a bluish green, and so deeply lobed as to make the stem appear to be growing out of the middle of them. The filaments of the stamens are very short, and the anthers, which are of a dark purple, are remarkably long and sharp-pointed. The seed-pod is from three inches to four inches long, very narrow, and having distinctly four sides; and the seeds, which are numerous, are flat with a distinct margin. Altogether the plant is a very remarkable one. The seeds were sent to Sir W. J. Hooker, early in 1833, from the hot springs of the Arkansas territory, under the name of the Arkansas cabbage. The plant is quite hardy, and may be sown in the open border in April or May. Seeds are not common, but may be procured at Charlwood's.

2.—STREPTANTHUS HYACINTHOIDES, *Hook.* THE HYACINTH-LIKE STREPTANTHUS.

ENGRAVINGS.—Bot. Mag. t. 3516; and our *fig.* 4, in Plate 13.

SPECIFIC CHARACTER.—Leaves oblong, linear, acuminate. Petals linear, with a reflexed limb. Filaments short, one pair united and abortive. Flowers pendulous.—(*Hook.*)

DESCRIPTION, &c.—This species is still less like a cruciferous plant than the other, as the flowers bear a great resemblance to those of a small hyacinth. It is a native of Texas; from which country it was sent by Drummond, in 1835, to the Glasgow Botanic Garden. Seeds may be obtained at Charlwood's.

GENUS VIII.

MORICANDIA, *Dec.* THE MORICANDIA.*Lin. Syst.* TETRADYNAMIA SILIQUOSA.GENERIC CHARACTER.—Siliques tetragonal, somewhat 2-edged. Seeds disposed in two rows. Calyx bisaccate at the base.—(*G. Don.*)1.—MORICANDIA ARVENSIS, *Dec.* THE FIELD MORICANDIA.SYNONYMES.—*Brassica arvensis*, *Lin.*; *Turritis arvensis*, *R. Br.* in *Hort. Kew.*ENGRAVING.—*Bot. Mag.* t. 3007.SPECIFIC CHARACTER.—Pods somewhat tetragonal. Stem-leaves cordate, stem-clasping, and entire.—(*Hook.*)

DESCRIPTION, &c.—Strongly resembling at the first glance *Streptanthus obtusifolius*, though it is more beautiful; and when closely examined, the construction will be found very different. The flowers are large and handsome; and they are disposed at some distance apart along a terminal raceme. The petals are lilac, with a bright crimson stain at the base of each. It is a native of Greece, and the shores of the Mediterranean, and quite hardy; but though it was introduced just a hundred years ago (in 1739), it is very little known. Seeds may be had at Charlwood's, and at other seed-shops.

GENUS IX.

HELIOPHILA, *N. Burm.* THE HELIOPHILA.*Lin. Syst.* TETRADYNAMIA SILIQUOSA.GENERIC CHARACTER.—Siliques elongated. Calyx equal at the base.—(*G. Don.*)1.—HELIOPHILA ARABOIDES, *Sims.* THE ARABIS-LIKE OR CLUB-POINTED HELIOPHILA.SYNONYMES.—*H. pilosa*, *Dec.* *H. integrifolia*, *Lin.*ENGRAVINGS.—*Bot. Mag.* t. 496; and our *fig. 7*, in Plate 13.

SPECIFIC CHARACTER.—Siliques round, uneven, club-pointed, and

mucronate. Leaves linear, fleshy; sometimes trifid at top, and sometimes simple.—(*Sims.*)

DESCRIPTION, &c.—A very beautiful little plant with pale-blue flowers, and very slender stems. It is a native of the Cape of Good Hope, and was introduced in 1768. It should be raised on a hot-bed if wanted to flower early, or it may be sown in the open border in May. It likes a warm open situation, as is implied by its name, *Heliophila* signifying a lover of the sun.

2.—HELIOPHILA DIGITATA, *Lin.* THE FINGER-LEAVED HELIOPHILA.SYNONYME.—*H. coronopifolia*, *Thun.*ENGRAVING.—*Bot. Reg.* t. 838.SPECIFIC CHARACTER.—Stem hispid from spreading hairs. Pods linear. Leaves oval, entire, or here and there grossly toothed.—(*G. Don.*)

DESCRIPTION, &c.—Greatly resembling the preceding species, of which it is probably only a variety. The stems are, however, much stronger, and the plant more decidedly prostrate. From this habit of growth, its bright-blue flowers produce a beautiful effect when grown in masses. It is a native of the Cape of Good Hope, whence it was introduced in 1819. We do not know where seeds are to be procured, but the specimen figured in the *Botanical Register* for 1824, was grown in Colvill's nursery, King's Road, Chelsea.

3.—*HELIOPHILA STRICTA*, Sims. UPRIGHT *HELIOPHILA*.ENGRAVINGS.—Bot. Mag. t. 2526; and our *fig.* 6, in Plate 13.

SPECIFIC CHARACTER.—Leaves hairy, lower ones lanceolate, pinna-

tified, upper ones linear, quite entire. Pods straight, mucronate pubescent.—(*G. Don.*)

DESCRIPTION, &c.—This is a curious little plant with very dark blue flowers, and a stiff upright habit of growth. It is a native of the Cape of Good Hope, and was introduced in 1820. We do not know where seeds are to be procured.

OTHER SPECIES OF *HELIOPHILA*.

Besides the above, there are sixteen other species of *Heliophila* which are marked as having been introduced. They are all natives of the Cape of Good Hope, and are said to bear a general resemblance to each other, differing principally in the colour of their flowers, which are white, pink, purple, and blue. We do not think it necessary to enter into details respecting them, as they do not appear to have been figured in any botanical periodical, and as their names are not in any of the seedsmen's catalogues.

GENUS X.

SCHIZOPETALON, Sims. THE *SCHIZOPETALON*.*Lin. Syst.* TETRADYNAMIA SILIQUOSA.GENERIC CHARACTER.—Cotyledons 4, spirally twisted. Petals pinnatifid.—(*G. Don.*)1.—*SCHIZOPETALON WALKERII*, Sims. WALKER'S *SCHIZOPETALON*.ENGRAVINGS.—Bot. Mag. t. 2379; Bot. Reg. t. 752. Sweet's Brit. Flow. Gard. 2nd Series, t. 387; and our *fig.* 5, in Plate 13.

SPECIFIC CHARACTER.—Leaves alternate, sinuately pinnatifid. Flowers

white, in long racemes. Pedicels each furnished with a linear bractea.—(*G. Don.*)

DESCRIPTION, &c.—A very remarkable plant, with fragrant white flowers, from the curious shape of which it takes its name, *Schizopetalon* signifying cut petal. The leaves are also cut; and the whole plant is covered over with short forked hairs. The stem is rather slender, and requires support; and the root, which resembles that of a young carrot, is very long, and furnished with a deep fringe of fibres at its lower extremity. It is a native of Chili, from which country Mr. Walker of Arno's Grove, near Hornsey, received its seeds in 1821. It is hardy, and will sometimes grow well in the open border, while at others, it dies off without any apparent cause. The reason of this is the length of its root, which requires a light sandy soil that it can easily penetrate. To raise this plant, the seeds should be sown in light sandy soil where they are to remain; or sown in pots in a hotbed, and when planted out the whole of the earth should be taken out of the pot together, and planted in a hole made in the border, without disturbing the roots in the slightest degree. The seeds should be sown thickly, and not thinned out; they are rather scarce, as they will only ripen in warm dry summers, but we procured some from Mr. Charlwood in March last, which, sown in a pot in a hotbed, came up very well in about a week; while others came up in about three weeks in the open ground.

GENUS XI.

BISCUTELLA, *Lin.* THE BUCKLER MUSTARD.*Lin. Syst.* TETRADYNAMIA SILICULOSA.GENERIC CHARACTER.—Silicle flat, biseutate. Cells adnate laterally to the axis. Style long, permanent. Embryo inverted.—(*G. Don.*)1.—BISCUTELLA HISPIDA, *Dec.* THE HAIRY BUCKLER MUSTARD.SYNONYMES.—*B. macrocarpa*, *Hort.* ? *B. auriculata*, *Lin.*; ? *B. erigerifolia*, *Dec.* *B. coronopifolia*, *Hort.*
ENGRAVING.—*Bot. Mag.* t. 2444.SPECIFIC CHARACTER.—Calyx acutely 2-spurred. Pod smooth, rough in the centre from elevated dots, not overhanging the style at the top. Stem hispid.—(*G. Don.*)

DESCRIPTION, &c.—A little plant, with bright yellow flowers, very much like those of the common mustard, and very curious seeds, that look like two little shields fastened together. There are several kinds named in the seed catalogues, but they all appear to be varieties of one kind. The seeds should be sown in a light sandy soil, at any time during the spring and summer, and they will generally flower six weeks after sowing. Seeds may be procured in any seed-shop, as they ripen abundantly.

GENUS XII.

MENONVILLEA, *Dec.* THE MENONVILLEA.*Lin. Syst.* TETRADYNAMIA SILICULOSA.GENERIC CHARACTER.—Style somewhat stipitate, biseutate. Cells with the margin expanded into a wing, ending in the parallel disk.—(*G. Don.*)1.—MENONVILLEA FILIFOLIA, *Fisch. et Meyer.* THE THREAD-LEAVED MENONVILLEA.

ENGRAVING.—Sweet's Brit. Flow. Gard., Second Series, t. 371.

SPECIFIC CHARACTER.—Leaves thread-like, undivided or lacinated.

DESCRIPTION, &c.—A slender but rigid plant, growing erect about a foot high. The flowers are white, and of no great beauty; the leaves are long and narrow like grass. It is a native of Chili, and was introduced in 1837 by A. B. Lambert, Esq., who received the seeds from the Botanic Garden at St. Petersburg. It requires a light loamy soil, and similar treatment to *Schizopetalon*, but we do not know where to procure seeds.

GENUS XIII.

CAKILE, *Tourn.* THE SEA ROCKET.*Lin. Syst.* TETRADYNAMIA SILIQUOSA.GENERIC CHARACTER.—Silicle two-jointed, compressed, upper joint ensiform. Seeds solitary in the cells, upper one erect, lower one pendulous.—(*G. Don.*)1.—CAKILE MARITIMA, *Scop.* THE COMMON SEA ROCKET.SYNONYMES.—*Bunias Cakile*, *Lin.* *Isatis pinnata*, *Forsk.* *Rapistrum maritimum*, *Berg.*ENGRAVINGS.—*Eng. Bot.* t. 231; 2nd. Edit., vol. v. t. 891.SPECIFIC CHARACTER.—Upper joint of pod ensiform. Leaves pinnate-parted.—(*G. Don.*)

DESCRIPTION, &c.—A very ornamental British plant, found on the sea-shore. Its stem is much branched

and bushy, and its branches spreading or zigzag. Its leaves are of a bluish green, and its flowers, which are large and handsome, and produced in bushy racemes, are purple or white. It requires a sandy soil, and flowers from June till September.

GENUS XIV.

RICOTIA, *Lin.* THE RICOTIA, OR SYRIAN HONESTY.

Lin. Syst. TETRADYNAMIA SILICULOSA.

GENERIC CHARACTER.—Silicle sessile, oblong, adult ones 1-celled, in consequence of the dissepiment having vanished. Valves flat. Calyx valvular, gibbous at the base. Petals emarginate. Stamens toothless.—(*G. Don.*)

1.—RICOTIA LUNARIA, *Dec.* SYRIAN HONESTY.

SYNONYMES.—*R. Ægyptiaca*, *Lam.* *Lunaria Ricotia*, *Gertn.* *Cardamine Lunaria*, *L.*

Series, t. 411.

ENGRAVINGS.—*Bot. Reg.* 49; *Sweet's Brit. Flow. Gard.* Second

SPECIFIC CHARACTER.—Leaves almost bipinnate. Lobes oblong, sinuated, angular.—(*G. Don.*)

DESCRIPTION, &c.—A pretty little plant with dark purple flowers, resembling in every respect, except colour, those of the Virginia stock. It is a native of Syria, and was first introduced in 1757. It was soon after lost, and has since been frequently introduced, and lost after a season or two, from its not ripening its seeds. It is now grown successfully by Messrs. Booth of Hamburg; Mr. George Booth having collected the seed on rocky situations in Palestine, where it flowers in April. The seeds should be sown very thickly on rock-work in autumn; and in favourable situations, that is, such as are warm and dry, the rock-work will be covered with a profusion of flowers, which from their dark purple, and white centre, will have a very striking effect.

GENUS XV.

ERYSIMUM, *Gert.* THE TREACLE MUSTARD.

Lin. Syst. TETRADYNAMIA SILIQUOSA.

GENERIC CHARACTER.—Silique tetragonal. Calyx closed. Cotyledons flat, oblong.—(*Dec.*)

1.—ERYSIMUM PEROWSKIANUM, *Fisch. et Meyer.* PEROWSKI'S ERYSIMUM, OR THE PALESTINE TREACLE MUSTARD.

ENGRAVING.—*Floral Cabinet*, vol. iii. p. 19.

SPECIFIC CHARACTER.—Leaves petiolate, lanceolate, remotely toothed.

Petals obovate. Seed-vessel bowed. Stigmata somewhat globose, fleshy.—(*Know. et West.*)

DESCRIPTION, &c.—A rather coarse-growing plant, with very large and showy bright orange, or rather scarlet flowers. It is a native of Palestine, and was sent from St. Petersburg, to the Birmingham Botanic Garden, in 1838. The name is not in any of the London nurserymen's catalogues, but seeds may probably be obtained of Messrs. Pope and Sons, Handsworth, near Birmingham. The plant is quite hardy, and requires no particular care in its cultivation.

CHAPTER IX.

CAPPARIDÆ.

ESSENTIAL CHARACTER.—Calyx of 4 to 6 sepals. Corolla of 4 to 6 petals. Stamens 6 or more, almost perigynous, rarely tetradynamous. Torus usually glandular; stipe of ovarum slender. Fruit a silique | one-celled capsule which opens at top, or a one-celled many-seeded berry. Placentas inter-valvular.—(*G. Don.*)

DESCRIPTION, &c.—Most of the plants belonging to this order are shrubby, like the common caper, and it only contains a few annuals, most of which belong to the genus *Cleome*. It is somewhat remarkable, that while the seeds of the caper, and the genera most nearly allied to it, are apt soon to become rancid; those of the different species of the genus *Cleome*, and of the other annuals, will keep in a vegetative state for several years, and may thus be easily introduced from any part of the world. The annual plants belonging to this order are all very splendid, and many of them hardy, though but very few of them have been introduced.

GENUS I.

CLEOME, *Lin.* THE CLEOME.*Lin. Syst.* TETRA-HEXANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx of 4-spreading nearly equal sepals. Petals 4. Receptacle somewhat hemispherical. Stamens 6, rarely 4, free. Silique stipitate, or sessile.—(*G. Don.*)

1.—CLEOME SPINOSA, *Sims.* THE SPINY CLEOME.

SYNONYME.—*Cleome pungens*, *Willd.*

ENGRAVINGS.—*Bot. Mag.* t. 1640; and our *fig.* 6, in Plate 15.

SPECIFIC CHARACTER.—Covered with a clammy pubescence. Leaves

with 5—7 leaflets. Floral ones simple, sessile, and cordate. Silique smooth and shorter than the stipe.—(*G. Don.*)

DESCRIPTION, &c.—A very showy annual, which was formerly supposed not to live out of the stove; but which is now found to succeed perfectly well if raised on a moderate hot-bed in February or March, and not planted out till the latter end of May or June. It requires a warm sheltered situation; but if planted in front of a south wall, or in a sunny corner, it will flower beautifully from July to September. It is a native of South America and the West Indies, and was introduced in 1731. It may be observed that the plants now grown, being brought from South America, are much harder than those first introduced, which were brought from the West Indies. Seeds may be obtained in all the seed-shops.

2.—CLEOME PENTAPHYLLA, *Lin.* THE FIVE-LEAVED CLEOME.

SYNONYME.—*Gynandropsis pentaphylla*.—(*Dec.*)

ENGRAVINGS.—*Bot. Mag.* t. 1681; and our *fig.* 5, in Plate 15.

SPECIFIC CHARACTER.—Smoothish. Leaves on the stem with 5

leaflets, the lowest and floral ones with 3 leaflets. Leaflets entire, and somewhat serrated.—(*G. Don.*)

DESCRIPTION, &c.—A very beautiful species with white flowers. It is a native of India and South America, and is generally grown in the stove; but may be raised in a hot-bed, and planted out in a warm dry border, where it will flower better than in a hot-house. It was introduced in 1640, and seeds may be had in any seed-shop.

3.—CLEOME ROSEA, *Vahl*. THE ROSE-COLOURED CLEOME.

ENGRAVINGS.—Bot. Reg. t. 980.

SPECIFIC CHARACTER.—Unarmed, smooth. Leaflets quinate, lower | and floral ones ternate, uppermost ovate, sessile. Silique smooth, length of stipe.—(*G. Don.*)

DESCRIPTION, &c.—An upright and rather stiff plant, growing about a foot and a half high, with stiff rose-coloured flowers. It is a native of Rio Janciro, introduced in 1824. Seeds may be had at Charlwood's, and at Forrest's, Kensington.

OTHER SPECIES OF CLEOME.

The following kinds, though some of them much hardier than those we have enumerated, are not in any nurseryman's catalogue; but we mention them in the hope that a demand may be created for them, in which case nurserymen will take care soon to procure the seeds.

C. PUBESCENS, *Sims*. *Bot. Mag.* t. 1857.

This species has white flowers, and bears some general resemblance to *C. pentaphylla*, though it differs in botanical construction. Its seeds were sent to England from Paris, in 1815; but it is not known of what country it is a native. It is half hardy.

C. SPECIOSISSIMA, *Deppe*. *Bot. Mag.* t. 1312.

A splendid plant with bright rose-coloured flowers; perhaps the handsomest of all the species. A native of the country near Xalapa in Mexico; introduced in 1829. It may be treated as a common border flower, and it will ripen its seeds in the open air.

C. MONOPHYLLA, *Lin.*

A native of Ceylon, with yellow flowers, and greenish blue anthers. Introduced in 1759.

C. TETRANDRA, *Banks*.

A native of New Holland, with yellow flowers, which would probably prove hardy in England, but which is not yet introduced.

C. VIOLACEA, *Lin.*

A native of Portugal, quite hardy, introduced in 1776. The flowers are purple, spotted with yellow.

C. ARABICA, *Lin.*

A native of sandy places in Arabia. Introduced in 1794. The flowers are white, with yellow veins, and tinged with purple at the extremity; the filaments are yellow.

There are many other kinds of Cleome, all beautiful and well worthy of cultivation. They may all be sown on a hotbed early in Spring, and planted out into a warm dry border about the middle of May. They will then flower splendidly, and ripen abundance of seeds. The seeds, as already observed, will keep well, and are therefore suitable for being sent from a distant country.

CHAPTER X.

MALESHERBIACEÆ.

ESSENTIAL CHARACTER.—Calyx tubular, membranous, inflated, 5-lobed. Lobes imbricated in æstivation. Petals 5, alternating with the segments of the calyx, persistent convolute in æstivation arising on the outside of a short membranous rim or corona. Stamens 5 or 10, perigynous. Filaments filiform, distinct or connected with the stipe of the ovarium. Anthers versatile. Ovarium superior, stipate, 1-celled, with the placentas at the base, from which the ovules arise by the

intervention of umbilical cords. Styles 3, filiform, very long, arising from distinct points of the apex of the ovarium. Stigmas clavate. Fruit capsular, 1-celled, 3-valved, membranous more or less, many-seeded. Seeds attached by umbilical cords to placentas arising either from the axis of the valves, or from their base. Testa crustaceous, brittle, with a fleshy crest, and no arillus. Embryo round, in the centre of fleshy albumen, with the radical next the hylum.—(*G. Don.*)

GENUS I.

MALESHERBIA, *Ruiz et Pavon.* THE MALESHERBIA.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—The same as that of the Order.

1.—MALESHERBIA CORONATA, *D. Don.* THE CROWNED MALESHERBIA.

ENGRAVINGS.—Sweet's Brit. Flow. Gard., 2nd Series, t. 167; and our *fig.* 3, in Plate 15.

SPECIFIC CHARACTER.—Plant clothed with glandular pubescence.

Leaves linear, sinuately toothed; throat of the calyx dilated; crown simple, toothed.—(*G. Don.*)

DESCRIPTION, &c.—A very singular and ornamental plant, a native of Chili at Valparaiso, raised from seeds brought over by Mr. Hugh Cuming, in 1832. The seeds are not common in the seed-shops, but they may be had from Mr. Charlwood, and at some other places. They should be sown in pots in light rich earth, in February or March, and placed in a hotbed; and when they come up they should be transplanted several times into larger and larger pots, till the middle of May, or beginning of June, and then planted out into a rich, warm, and well-sheltered border, where, if allowed plenty of room, and occasionally watered, they will grow two feet or three feet high, and spread in proportion, flowering abundantly.

2.—MALESHERBIA LINEARIFOLIA, *Poir.* THE LINEAR-LEAVED MALESHERBIA.

SYNONYMES.—? *Gynopleura linearifolia*, *Cav.* ? *Malesherbia paniculata*, (*D. Don.*)

ENGRAVINGS.—Bot. Mag. t. 3362; and our *fig.* 4, in Plate 15.

SPECIFIC CHARACTER.—Clothed with glandular pubescence. Leaves linear, toothed, stipulated at the base. Stipules tripartite. Throat of the calyx dilated. Ovarium subglobose.—(*Hook.*)

DESCRIPTION, &c.—A slender delicate plant, growing about a foot high, and bearing panicles of pale-blue flowers. It is a native of the Andes, whence seeds of it were brought by Mr. Hugh Cuming. It flowered, for the first time in Britain, in September 1834, in the Glasgow Botanic Garden, where it was kept in the greenhouse. From the mountainous situation, however, which it occupies in its native country, it would probably succeed well if sown in May in the open ground in the neighbourhood of London. We do not know where seeds are to be procured.



1. *Spum. cristatissimum* — 2. *Linum Borondieri* — 3. *Malosherbia coronata* —
 4. *Malosherbia linearifolia* — 5. *Cleome pentaphylla* — 6. *Cleome spinosa* —
 7. *Holanthemum guttatum*.

CHAPTER XI.

LINACEÆ.

ESSENTIAL CHARACTER.—Sepals 3—5. Petals 3—5, hypogynous. Stamens 3—5, hypogynous, combined at their bases. Styles 3—5. Capsule 10-celled. Cells 2-seeded. Seeds compressed.

GENUS I.

LINUM, *Bauh.* THE FLAX.

Lin. Syst. PENTANDRIA PENTAGYNIA.

GENERIC CHARACTER.—Sepals 5, entire. Petals 5. Stamens 5. Styles 5, rarely 1 or 3.—(*G. Don.*)

1.—LINUM USITATISSIMUM, *Lin.* THE COMMON FLAX.

ENGRAVINGS.—Eng. Bot. t. 1257, 2nd Edition, vol. iii., t. 453; and our *fig.* 1, in Plate 15.

SPECIFIC CHARACTER.—Plant erect, glabrous. Leaves lanceolate or linear acute, panicle corymbose. Sepals ovate, acute, or mucronate, with scarious or membranaceous margins. Petals rather crenated, three times larger than the calyx.—(*G. Don.*)

DESCRIPTION, &c.—How many persons are there who wear linen, who have no idea of the simple beauty of the flower of the plant producing it. The common flax has large clear blue flowers; and where it is allowed room to spread, it makes a handsome plant. The flax, though now found wild in Britain, is supposed to have been originally introduced from Egypt; and it has been in cultivation for its fibre from almost the earliest period of civilisation. When grown entirely for its fibre, the seeds are sown as thickly as possible, in order that the plants may be drawn up with long and slender stems, and have a fine fibre; and this is the case in Holland and the Netherlands, where it is cultivated extensively. When it is grown partly for its fibre, and partly for the seed which is called linseed, and used to make linseed oil, to feed birds, &c., it is sown much thinner and encouraged to form a branching head. If the fibre be the sole object, the plant is pulled green and instantly tied in bundles, which are placed in water to macerate; but when the seeds are thought valuable, they are suffered to ripen, and when the plant is pulled, the head is drawn through an instrument like a rake, or coarse comb, called a rippling machine, in order to separate the seeds from the stalks before they are laid in water. When the stalk is sufficiently decayed for the fibrous matter to be separated, it is what is called dressed; that is, the fibre is separated from the woody part, which is called the harl, by scutching, and hacking or breaking, and heckling or combing. It is afterwards spun and woven into linen.

When grown in gardens, the seeds should be sown as thinly as possible; and when the plants come up they should be thinned out, so as to leave only three in a patch; and these should stand at a sufficient distance asunder to allow them room to branch. The soil should be deep, rich, and rather stiff.

2.—*LINUM VERTICILLATUM*, *Lin.* THE WHORLED-LEAVED, OR ROMAN FLAX.

SPECIFIC CHARACTER.—Leaves in whorls, linear-lanceolate, upper ones as well as the calyces villous.—(*G. Don.*)

DESCRIPTION, &c.—A pretty delicate little plant, resembling the common flax, but smaller in all its parts, and with very pale flowers, which are rather of a French grey than blue. The seeds of this species are more common than those of any other in the seed-shops; and they require no particular care in their culture, except that they should be sown in rich loamy soil. Like all oily seeds they do not keep well, so should be used as soon as practicable after ripening. The plant is a native of Italy, near Rome; and the date of its introduction is unknown.

3.—*LINUM BERENDIERI*, *Hook.* BERENDIER'S YELLOW FLAX.

SYNONYME.—*L. Platzii*, *Hook.*

ENGRAVINGS.—*Bot. Mag.* t. 3480; and our *fig.* 2, in Plate 15.

SPECIFIC CHARACTER.—Stems angular, numerous and branching.

Leaves alternate, linear and smooth, mucronate-acuminate, margin even. Flowers sub-corymbose. Bractees lanceolate-acuminate, bristly. Sepals roughly serrulated at the margin. Capsules globose acute.—(*Hook.*)

DESCRIPTION, &c.—A very beautiful yellow-flowered flax, growing about a foot high. A native of Mexico, from which country it was sent by Mr. Drummond in 1835 to the Glasgow Botanic Garden. It requires a rich light soil; and to blossom at its natural season, March, it should be sown the previous August or September, either in the open ground covered with litter, or in pots under glass. It succeeds very well, however, if sown in March or April, when it will blossom in August. Seeds may be had at Charlwood's, and other seed-shops, where it is frequently called a biennial, from the practice we have alluded to of sowing it in the autumn.

OTHER SPECIES OF ANNUAL FLAX.

The following species are all very ornamental; and they are all said to have been introduced, but we do not know where seeds of them are to be procured.

L. GALLICUM, *Lin.*

A native of France and Spain. A low-growing plant with yellow flowers. Introduced 1777.

L. AUREUM, *Walds et Kit.*

A very low plant, with golden yellow flowers, a native of Hungary. Introduced in 1820.

L. VIRGINIANUM, *Lin.*

A native of North America on dry sunny hills, with small pale yellow flowers.

L. STRIATUM, *Walt.*

A native of Carolina, with striped blue and white flowers. Introduced in 1817.

CHAPTER XII.

CISTACEÆ.

ESSENTIAL CHARACTER.—Calyx of five unequal sepals. Petals five. Stamens definite or indefinite, hypogynous. Capsule 3—5-valved, 1—5-celled, many-seeded. Placentas parietal.—(*G. Don.*)

GENUS I.

HELIANTHEMUM, *Tourn.* THE SUN-ROSE.

Lin. Syst. POLYANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx of three equal sepals or of five unequal sepals. Capsule trigonous, 1-celled, 3-valved, with a narrow dissepiment or a placental nerve in the middle of each valve.—(*G. Don.*)

1.—HELIANTHEMUM GUTTATUM, *Mill.* THE SPOTTED SUN-ROSE.

SYNONYMES.—*Cistus guttatus*, *Lin.* *C. acuminatus*, *Viv.*

ENGRAVINGS.—*Eng. Bot.* 544, 2nd Edition, vol. v. t. 758; and our *fig. 7*, in Plate 15.

SPECIFIC CHARACTER.—Rather hairy. Leaves opposite, sessile, oblong-

linear, 3-nerved, villously-hairy, uppermost ones alternate. Racemes loose, bractless. Pedicels filiform, almost naked; outer sepals one half shorter than the inner ones.—(*G. Don.*)

DESCRIPTION, &c.—A very pretty little flower, almost the only annual of all the extensive genus to which it belongs. There are several varieties of it, differing very little from each other. It is a native of Britain and the whole of Europe; its seeds may be had in any seed-shop, and they may be sown in March or April.

CHAPTER XIII.

VIOLACEÆ.

ESSENTIAL CHARACTER.—Sepals 5, equal or unequal. Corolla spurred | irregular flowers are furnished with an appendage each, which are
of 5 petals, regular or irregular. Stamens 5, perigynous. Filaments | drawn within the spur. Capsule one-celled, three-valved, many-
drawn out each into a scale beyond the anther; two of the filaments in | seeded. Placentas three parietal.—(*G. Don.*)

GENUS I.

VIOLA, *Tourn.* THE VIOLET.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx with unequal sepals, all drawn out at the base more or less into ear-like appendages. Lower petal drawn out at the base into a hollow spur. Stamens approximate, the two

anterior anthers furnished with long awl-like appendages. Capsule triangular. Valves opening with elasticity.—(*G. Don.*)

1.—VIOLA TRICOLOR, *Lin.* THE THREE-COLOURED VIOLET, OR COMMON HEARTSEASE.

ENGRAVINGS.—*Eng. Bot.* t. 1287, 2nd Edit. vol. ii. t.; and our *figs.* 1, 3, 4, 5, 6, and 7, in Plate 14.

VARIETIES.—These are very numerous; amounting indeed to above a thousand, most of which can scarcely be called varieties, as they are in fact hybrids between the annual species *V. tricolor*, and the perennial kinds *V. grandiflora*, *V. altaica*, *V. amœna*, &c. These hybrids partake in so much of the character of *V. tricolor*, that they will all blossom about two months after sowing their seed; while they have so much of the perennial about them, that they may be propagated by cuttings, &c., and thus kept alive several years. Among the varieties now in cultivation are, Allen's John Bull (*fig. 6*), Allen's Minerva (*fig. 5*), Enterprise (*fig. 4*), Fairburn's Anna Maria (*fig. 7*), Brown's Tiger,

(*fig. 3*), which are all old kinds, and to which may be added many others. The best new kinds in 1838, we are told by Mr. Hopgood, were Victoria with a white ground; Trafalgar straw colour and purple; Venus fine eye; Chimpanzee fine purple; Gem; and Desdemona superb yellow. To these might be added many others, but as fresh ones are brought forward every season, it would be of little use to enumerate them.

SPECIFIC CHARACTER.—Root somewhat fusiform. Stems branched, diffuse. Lower leaves ovate-cordate, deeply crenate. Stipulas runcately-pinnatifid, with the middle lobe crenate. Petals incumbent, with short claws; spur thick, obtuse, not stretched out; nectaries short. Seeds oblong-ovate.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of the wild Heartsease consist of five petals; the two upper of which are much larger than the lower ones, and of a different colour. The two upper petals are generally purple, and the

three lower ones yellow ; the centre one being broader than the others, and streaked with dark brown. What appear to be the leaves, consist each of one long real leaf, and two deeply cut stipules. The stamens are very curiously formed ; they have no filaments, but two of them have long tails, and they are all bordered by a fringe of hairs. The style is short, fleshy, and funnel-shaped ; and at the top there is a hole, to which there is a small lip. The seed-pod is oblong, and when ripe, it splits into three parts to discharge the seeds. The root is carrot-shaped ; and if eaten, it acts as an emetic.

This heartsease, notwithstanding its curious internal construction, is so small, so simple, and apparently so unpretending, that it is scarcely possible to imagine that the large and magnificent flowers now called Heartseases by florists, can have sprung from it. "The cultivated heartsease," Mr. Gorrie tells us, "should have large and round petals, the flower forming nearly a circle, not much undulated ; the colours distinct and permanent ; the eye rather small, and not deeply pencilled ; the flower-stalk strong and straight ; and the stigma filling the open part of the eye." (*Gard. Mag.* viii. p. 575.) Though this change is entirely the result of cultivation, it must not be supposed that the mere circumstance of transplanting a wild heartsease into rich garden soil, and carefully watering it, &c., will at once change it into a florist's flower. This is only the first step. Seeds are taken from a plant thus improved, and grown with great care ; and the largest and finest of the seedlings thus raised, are selected to yield seed in their turn. Sometimes hybrids are raised by fecundating the stigma of one kind by the pollen of another ; and these plants generally possess, in a great degree, the qualities of both parents. *Viola grandiflora* is frequently used for producing hybrids with the common heartsease ; and this species has very large flowers, which peculiarity is preserved in all its seedlings. *V. amoena* is another parent, with very large flowers, the upper petals of which are of dark purple, and the lower ones of a paler bluish tinge ; and all the hybrids raised partly from it, preserve these peculiarities more or less. The descendants of the common heartsease, have dark purple and bright yellow flowers ; and those of *V. lutea* are generally nearly all yellow, with blackish, branched radiating lines. The hybrids raised from *V. altaica* are of a very pale, yellowish hue ; and the petals are generally somewhat undulated at the margin : those from *V. rothomagensis* or *hispida* are of a pale bluish lilac, and those from *V. bicolor* are white, slightly veined with purple, and tinged with yellow at the base. All these kinds, of course, vary very much ; as these hybrids are made parents, in their turn, of what may be called sub-hybrids, and these again of others. The number of varieties of heartsease, it will thus be seen, may be said to be unlimited. There are now above a thousand named sorts ; and more are being raised every year. The variety of forms and colours which appear in the plants raised from seed, is indeed so great, that few floricultural pursuits can be more interesting, than to sow a bed of pansies, and watch when they come up for the new varieties that may be worth saving. Mr. Wells of Redleaf has a garden set apart for experiments of this kind ; and a year or two ago, he described to us with so much vividness the pleasure he took in looking over his beds for new kinds, that he made us long for a garden with sufficient space to follow his example. Even at Bayswater, however, in the gardens of our neighbour, Mr. Hopgood, who raises heartseases for sale, we have seen almost innumerable varieties. During the year 1838, we saw them splendidly in flower from March to October ; and we observed that some few flowers, here and there, lingered through the winter of 1838-39.

GEOGRAPHY AND HISTORY.—The heartsease is a native of nearly all Europe and North America. It grows always in sandy loam, and generally in the headlands, and under the hedges in cultivated fields. A curious anecdote related of the first American botanist Bertram, bears reference to this habitat of the plant. Bertram

was a farmer, and one day while standing on the headland in one of his fields, superintending some farming operations, which were carrying on in the centre, he gathered a heartsease which grew at his feet, and thoughtlessly began to pull off its petals, while he was speaking to his men. We have already mentioned that the stamens and pistil of the heartsease are very curiously constructed; the mass of stamens without filaments huddled together, looks something like the body of some small animal; the two that are furnished with tails, resemble arms; and the style with its round knob-like top, and the hole in its side, bears considerable resemblance to a head. The curious appearance thus formed, caught Bertram's attention; and he took it home with him to examine it more attentively. From this slight circumstance Bertram became a botanist; he gave up farming to study physic, as being more congenial with his new pursuits; he entered into correspondence with Linnæus, and all the first naturalists in his time; and he died loaded with honours received from almost every scientific society in Europe.

The heartsease, though long a favourite garden flower, was not valued by florists, till about 1810 or 1812, when the present Lady Monck, "then Lady Mary Bennet, had a little flower-garden in the grounds of her father the Earl of Tankerville, at Walton-upon-Thames. In this little garden was the figure of a heart, in which this amiable lady used to plant the varieties of Pansies, which she accidentally discovered growing in her father's garden. Aided by the industry and zeal of Mr. Richardson, then, and still gardener at Walton, several pretty varieties were raised and transplanted to this little parterre."—(*Gard. Mag.* vol. xi. p. 427.) From this small beginning may be traced the rage which has since prevailed for cultivating this flower. Mr. Richardson soon became extremely fond of raising new varieties from seed; and in the year 1813 or 1814, some of his new kinds attracted the attention of Mr. Lee, of the Hammersmith nursery. Mr. Lee instantly perceived the advantage that might be derived from the culture of this flower; and a number of new and beautiful varieties were soon raised in the Hammersmith nursery. Other nurserymen followed his example, and in the course of a few years, the heartsease took its place as a florist's flower.

The names of the heartsease are very numerous. Besides Heartsease and Pansy, by which names it is generally designated in books, it is called Herb Trinity, Love and Idleness, Love in Idleness, Live in Idleness, Kiss behind the garden gate, Three faces under a hood, Kit run in the streets, Call me to you, Jump up and kiss me, Look up and kiss me, Pink of my John, Flower of Jove, Flamy, &c. The French call it *Herbe de la Trinité*, and *Pensée*, which last name is no doubt the origin of our word, Pansy. The Spaniards also name it *Yerba de la Trinidad*. The Italians call it *Little Flame*, *Winged Violet* and *Butterfly Violet* (*viola farfalla*). They also call it *Mother and Daughter-in-law*; and this strange name accords with that given to it by the Germans, who call it *Step-mother*.

CULTURE.—It is the habit of the Heartsease to ripen a succession of seed during the whole of its flowering season. As soon as the petals of a flower drop, its seed-pod swells and ripens, while other flowers are expanding; and thus the plant generally bears ripe fruit and flowers at the same time. The seed may be sown of the common sorts in the common soil; but for the finer kinds it is usual to make a bed in some shady part of the garden. The soil of this bed should be about eighteen inches deep, and it should consist of loam mixed with sand and vegetable mould, and highly manured. The seedlings will flower in about two months from the sowing of the seed, whether the time of sowing be autumn, summer, or spring; and as soon as they have flowered, the plants should be all taken up, the best replanted eighteen inches apart, and the others thrown away. It must be remembered that though these plants are very liable to be scorched by the excessive heat of the sun, and

require constant watering, they are also very liable to be damped off by cold and wet in winter. It must therefore be contrived that the bed in which they are planted shall be well drained, and open to the east and west. The wild heartsease is quite hardy; but the finer sorts, in proportion to the number of generations that they are removed from it, become delicate and liable to disease.

The finest flowers are said to be produced by cuttings, taken off in spring, and grown rapidly so as to flower the same summer or autumn. These cuttings should be taken from the points of the shoots, cutting them off immediately below a joint. This is done with all cuttings, as it is from the joints or buds only that the young roots will grow. The end of the cutting must be made firm in the soil, to induce it to throw out roots; and it must be covered with a bell-glass and shaded, to keep in the moisture and prevent too much evaporation by the leaves, which the cutting, having no roots by which it can imbibe a fresh supply, would be unable to support. For the same reason the cutting is deprived of the greater part of its leaves; as every leaf presents a fresh surface for evaporation. The cuttings of heartsease should either be struck (that is, induced to strike root) in silver sand or very sandy loam; as soil of this kind by permitting the transmission of water through it, prevents stagnation, and consequently the lower parts of the stems from absorbing it to such a degree as to induce rotteness. As soon as the cuttings are rooted they should be transplanted to the bed or border, and supplied with water, and shaded for a day or two till the roots become established.

The finer kinds of heartsease are also propagated by layers. The operation of layering is performed by pegging down the young shoots, and covering them all but their points with rich mould kept moist. When the layers have rooted, they are divided from the parent plant and transplanted. The roots may also be divided into what are called slips, and planted in a shady border, the plants which have not yet flowered being preferred for this operation.

In all cases where heartseases are to be transplanted, or cuttings or layers planted out, it should be done, if possible, in dull rainy weather; and if this is impossible, the newly-transplanted flowers should be well watered and shaded. Where new kinds are to be raised from seed, the seed should be gathered from those plants which produce the largest and handsomest flowers, and at the season when they blossom in greatest perfection; and this season is usually from April till June, as the plants appear weakened by the heat of summer, and generally produce smaller flowers in autumn. Though heartseases may be said to be in flower in favourable situations nearly all the year, they are only in full flower in two seasons—viz., from April to June, and from August or September till the setting in of the winter.

2.—*VIOLA LUTEA*, *Huds.* THE YELLOW HEARTSEASE.

ENGRAVINGS.—Eng. Bot. t. 721, 2nd Edition, vol. ii.; and our *fig.* 2, in Plate 14.

SPECIFIC CHARACTER.—Root fibrous, slender. Stems triangular,

simple. Leaves ovate-oblong, crenate, fringed. Stipulas palmatifid. Sepals lanceolate, acute. Petals wedge-shaped, with long distinct claws. Spur the length of the calyx.—(*G. Don.*)

DESCRIPTION, &c.—The flower is larger than that of *V. tricolor*, and is yellow marked with blackish, radiating lines: sometimes the upper petals are purple. It is a native of Britain, particularly of the mountains in Wales and Scotland. It is properly a perennial, but it has been introduced here; because when raised from seed the young plants will flower almost as soon as those of the common heartsease—that is, in about two months after the seeds are sown.

CHAPTER XIV.

RESEDACEÆ.

ESSENTIAL CHARACTER.—Calyx 4—6 parted, or 5-toothed. Petals 4—6, open in æstivation, unguiculate, inserted into the base of a dilated disc. Stamens definite, 2 or 3 to each petal; hypogynous. Stigma 3—4 lobed. Capsule inflated, trigonal; placentas parietal. Seeds coehleate.—(*G. Don.*) This order, and that of *Violaceæ*, according to the botanical arrangement, should precede *Capparidaceæ*.

GENUS I.

RESEDA, *Lin.* THE MIGNONETTE.

Lin. Syst. OCTO-POLYANDRIA, TRI-TETRAGYNIA.

GENERIC CHARACTER.—Calyx of 4—5—6, narrow segments. Petals 4—5—6 cloven. Capsule bladderly, 3—4 horned, many-seeded.—(*G. Don.*)

DESCRIPTION, &c.—This genus consists of numerous species, the most remarkable of which are the Weld, or Dyer's Weed (*Reseda luteola*), a British plant, used in dyeing yellow, and from which the colour called Dutch pink is made; and the common sweet-scented Mignonette (*Reseda odorata*).

1.—RESEDA ODORATA, *Lin.* THE COMMON, OR SWEET-SCENTED MIGNONETTE.

ENGRAVING.—Bot. Mag. t. 29.

SPECIFIC CHARACTER.—Leaves lanceolate, bluntish, entire, or trifid. Calyx 6-parted, equal in length to the petals, which are finely cleft

into many club-shaped divisions; the two lowest simple. Capsules 3-toothed.—(*G. Don.*)

DESCRIPTION, &c.—The Mignonette, though called an annual, and always treated as such in this country, is in fact a shrub, and when carefully preserved through the winter, its stem becomes woody. In this state, it is called the tree Mignonette, and is by many supposed to be a different species. Though its flower is by no means showy, it is a general favourite for its fragrance, and there are few flower-gardens in which it is not sown. It is a native of Barbary, where it has been found, by modern botanists, in the sands near Mascora, a fortified town of Algiers. It is also generally described in books as a native of Egypt, but on what authority is not known, as there is no record of its having been ever found wild in that country. The earliest English writers who mention it (about the middle of the eighteenth century) call it the Egyptian Rocket. It appears to have been first brought from Barbary into Spain, from which country it was carried to the south of France, and thence to Paris. From Paris, its seeds are said to have been sent by Lord Bateman to Mr. Bateman, at Windsor, in 1742, though it did not come into general cultivation till 1752, when seeds of it were received by Miller, who was then curator of the Botanic Garden, Chelsea, from Dr. Adrian Van Royen, of Leyden. From the Chelsea Garden it soon passed into those of the London florists, and the “fragrant weed,” as Cowper calls it, soon became a favourite.

The name of *Reseda* is derived from the Latin *resedo*, to calm, or appease; and it is supposed to bear reference to the healing properties of one of the species. The name Mignonette is literally “little darling.” It is said in the little work called *Le Langage des Fleurs*, that this flower forms part of the arms of a noble family in Saxony, from an incident in the life of one of its descendants. The legend is that the Count Walsthein was paying his addresses to a beautiful heiress, who trifled with his affections, and who had a dependent cousin secretly in love with the count. One evening, while walking in the garden, the ladies each chose a flower, and the heiress gaily

challenged the Count to write the description of each in one line. She had chosen a Wild Rose, and the Count, who had been piqued by her numerous flirtations, wrote—

Charming, but evanescent.

The cousin had chosen Mignonette, and the Count's motto for this flower was—

Your qualities surpass your charms.

The legend adds, that the Count married the cousin, and in compliment to her, inserted the Mignonette in his coat of arms.

CULTURE.—The Mignonette is so favourite a flower that it is sown at all seasons, and many gardeners contrive to have it in flower every month in the year. To do this, they sow it at four or five different times. If it be wanted to flower in winter, the seed is usually sown in the open ground about the end of July. About the middle of September these plants will be ready for planting in pots, shading them for a few days after transplanting, and protecting them from heavy rains. Before the frost sets in, the pots should be placed in frames till the beginning of November, when some of them will begin to show flower-buds. They should then be removed to the greenhouse, where they will branch out, and continue flowering till spring. In small gardens, where there are neither greenhouses nor frames, the same effect may be produced by placing the pots in the window of a room without a fire, till they begin to form blossom buds, and then removing them to a warm window in a living room, where they will blossom beautifully. Abundance of Mignonette will be thus produced from November till March; but it will be more difficult to have plants in flower during the months of March, April, and May. The seeds, in this case, must be sown in pots about the latter end of August. They must be protected from the cold, and heavy rains, and in November they should be thinned out, leaving only eight or ten plants in each pot. The pots should then be sunk in an old hotbed of manure, or tan, and covered with a frame, where they must be kept, and covered closely at night, till they begin to form flower-buds, when they must be removed to the greenhouse. In a small garden, the seeds may be sown in pots, and during the severe weather, a shallow box, or packing-case, may be filled with coal ashes, into which the pots may be plunged. This will keep the roots moist, and prevent the leaves from turning yellow. In very severe frosts, the plants may be covered with an old blanket, or piece of carpeting. When they have formed blossom buds, they may be removed to the window of a room where there is a fire, when they will blossom freely. A third crop may be sown in February, and treated like the last, or raised on a hotbed. These will come into blossom by the end of May, and they will be succeeded by plants sown in April, which will continue in flower till they are killed by the frost. The summer-sown species will then be just ready to flower; and thus a succession of flowers will be kept up all the year.

Among the many uses of the Mignonette, may be reckoned that of planting it with Candy-tuft, Clarkias, &c., as we have already recommended. Boxes of it are also raised for windows, &c., and tufts are planted in court-yards. Wherever it may be grown, care should be taken to sow the seeds in a poor sandy soil, as unless this is done, the Mignonette will have scarcely any fragrance.

The tree Mignonette is nothing but the common Mignonette, preserved through the winter, and trained so as to form a tree. It is propagated by cuttings, and is more fragrant than when grown as an annual. Many persons attempt to buy its seeds; but as its real seeds would only produce the common kind, nurserymen generally sell the seeds of the Dyer's Weed (*Reseda luteola*), a common British plant, for it. This plant is an annual, with taller and stronger stems than the common Mignonette, and it is cultivated for the yellow dye which it affords; but it certainly is not worth growing in a flower-garden.



1. *Rubus Asperatus* — 2. *Malva trifida* var. *alba* — 3. *Palavia rhombifolia*
 4. *Malva grandiflora* — 5. *Leptocera trimestris* — 6. *Malva moschata* var. *alba*

CHAPTER XV.

MALVACEÆ.

ESSENTIAL CHARACTER.—Sepals generally 5, rarely 3—4. Petals 5, twisted in æstivation. Stamens numerous, hypogynous, and combined with the claws of the petals into a column, which girds the style and ovaria. Anthers one-celled. Carpels numerous, disposed in a whorl around the axis, capsular or baccate.—(*G. Don.*)

DESCRIPTION, &c.—All the plants belonging to the order Malvaceæ are remarkable for their showy flowers and curious seed-vessels, which resemble little cheeses, and are full of a mucilaginous matter, which is reckoned excellent for diseases of the lungs. The name of *Malva* indicates this quality, as it is derived from a Greek word signifying soft, or softening. The flowers have several peculiarities in their botanical construction. The petals are curiously twisted together in the bud, and the stamens grow together at the base into a kind of column, bearing at their summits kidney-shaped anthers, each containing only one cell, instead of two, as is the case with most other plants. The carpels grow together in a circle, so as to form a flat plate with the styles, which are joined together at the bottom, rising like a column in the centre. “Each carpel,” says Dr. Lindley, “contains one seed, with an embryo curiously doubled up and filling the whole cavity; hence, as the carpels are all of the same size, and arranged with the most exact regularity on the same level, if a fruit is cut through, it will present a singularly beautiful arrangement of the parts, which look like a vegetable star.”

GENUS I.

MALVA, *Lin.* THE MALLOW.*Lin. Syst.* MONADELPHIA POLYANDRIA.

GENERIC CHARACTER.—Calyx girded by a 3-leaved involucre, rarely by a 5—6-leaved one; leaflets oblong or setaceous. Carpels capsular, 1-seeded, verticillate, disposed in an orbicular head.—(*G. Don*)

DESCRIPTION, &c.—The common Mallow of the hedges, and that so abundant in church-yards, are so well known, that but little description is necessary for the genus. A malvaceous plant may indeed be always known at first sight, and the only difficulty is to know which of the genera it belongs to; which is not easily determined, as the differences between the genera, consisting chiefly in the seed-pods, are not conspicuous to unbotanical eyes. All the kinds of annual plants belonging to this order should be sown in warm sunny situations, and are killed with the slightest frost; they do not bear transplanting well, except when very young, or when a ball of earth is kept round the roots. They have been cultivated in flower-gardens since the time of Parkinson (1620), who says, that “for their bravery, they were entertained everywhere, into every country-woman’s garden.”—*Paradisus*, p. 3661. They may all, like the mignonette, be made perennial, or even shrubby, by keeping them through the winter in a greenhouse, and propagating them by cuttings.

1.—MALVA MOSCHATA, *Lin.* THE MUSK MALLOW.

ENGRAVINGS.—Eng. Bot. t. 547; 2nd edit., vol. v. t. 980; and our *fig. 6* in Plate 16 of the white variety.

VARIETY.—*M. m. 2 alba*, Hort.; *syn. M. m. 2 undulata*; *Sims Bot. Mag.* t. 2298, has white flowers.

SPECIFIC CHARACTER.—Lower leaves kidney-shaped, cut, cauline ones 5-deeply pinnatifid, jagged segments. Stems and calyxes scabrous from simple hairs.—(*G. Don.*)

DESCRIPTION, &c.—The species has large rose-coloured flowers, and a slender branching stem, with very deeply cut leaves. It grows wild in Britain, on the borders of fields, and by the road side in gravelly soil; and

in its wild state it is considered a perennial, though it is treated as an annual in gardens. The whole plant yields a faint musky odour when drawn through the hand. The white is a garden variety, and is not found wild. The seeds of both kinds may be had at Lee's, Hammersmith, and in most other seed-shops.

2.—MALVA MAURITANIA, *Lin.* THE MAURITANIAN, OR IVY-LEAVED MALLOW.

ENGRAVINGS.—Brit. Flow. Gard. t. 81.

SPECIFIC CHARACTER.—Stem erect; leaves 5-lobed, obtuse; pedicels and foot-stalks smoothish.—(*G. Don.*)

DESCRIPTION, &c.—A strong-growing plant, rising nearly six feet high, with pink, crimson, or deep purple flowers. A native of Italy, Spain, and Portugal; introduced in 1768 by John, Earl of Bute. Its seeds may be procured at any seed-shop, and they may be sown in autumn, or in March or April.

3.—MALVA CRISPA, *Lin.* THE CURLED, OR FRENCH MALLOW.

SPECIFIC CHARACTER.—Stem erect; leaves angular, toothed, curled, glabrous; flowers axillary, sessile.—(*G. Don.*)

DESCRIPTION, &c.—This is one of the oldest foreign Mallows cultivated in our gardens, as it is included by Tusser in his list of garden flowers in 1573. It grows about six feet high, with an erect and vigorous stem; and its flowers are rather small and whitish, tipped with pale purple or rose-colour. The leaves are curiously curled at their margins. It is a native of France. Seeds may be procured in the seed-shops under the name of the curled mallow; and they may be sown in the open border in April or May.

4.—MALVA LIMENSIS, *Lin.* THE LIMA, OR BLUE MALLOW.

SPECIFIC CHARACTER.—Erect, leaves 7-lobed, wrinkled; spikes axillary; flowers leaning to one side; carpels smooth.—(*G. Don.*)

DESCRIPTION, &c.—A rather small, but erect species, with spikes of blue flowers. A native of Peru, introduced in 1768. This is a very ornamental species, but we do not know where seeds are to be procured.

OTHER SPECIES OF MALLOW.

The following species, though introduced, not being common in the nurseries, we have not thought it necessary to enter into details respecting them.

M. AMERICANA, *Lin.*

A very pretty species only a foot high, with yellow flowers; a native of the West Indies, introduced in 1756.

M. MAREOTICA, *Del.*

A native of Egypt, introduced in 1822; growing 2 feet high, and with red flowers.

M. CAROLINA, *Lin.*

A trailing species, with red flowers; a native of Carolina, introduced in 1723.

To these may be added *M. stricta*, the Upright Mallow, and *M. Hispanica*, the Spanish Mallow; though neither of them possess any remarkable beauty in their flowers.

There are many other annual species of Mallow, but none of them are worth cultivating.

GENUS II.

MALOPE, *Lin.* THE MALOPE.*Lin. Syst.* MONADELPHIA POLYANDRIA.

GENERIC CHARACTER.—Calyx girded by a 3-leaved involucre; leaflets cordate; carpels numerous, 1-seeded, disposed into a head.—(*G. Don.*)

DESCRIPTION, &c.—The genus *Malope* differs from the genus *Malva* principally in the shape of the capsules, and the manner in which they are disposed. In the *Malva* they unite so as to form a flat capsule, but in the *Malope* they form a close, aggregate head, resembling that of the raspberry. The flowers of the *Malope* are generally larger and more showy than those of the *Malva*, and the texture of their petals is softer and more transparent; whence the name of *Malope*, from a Greek word signifying tender.

1.—MALOPE TRIFIDA, *Cov.* THE TRIFID MALOPE.

VARIETIES.—*M. t. 2 alba*, *Dec.* has white flowers. *M. t. 3 grandiflora*, *Syn. M. grandiflora Hort.*, has very large rose-coloured flowers.

ENGRAVINGS.—Sweet's *Brit. Flow. Gard. t. 153*; our *fig. 2*, in

Plate 16, of the white flowered variety; and our *fig. 4*, in Plate 16, and *Pact. Mag. of Bot. vol. i. p. 177*, of *Malope grandiflora*.

SPECIFIC CHARACTER.—Leaves three-nerved, trifid, toothed, glabrous; lobes acuminate. Peduncles axillary, one-flowered.—(*G. Don.*)

DESCRIPTION, &c.—The common *Malope trifida* is rather a low-growing plant, seldom exceeding a foot in height, with very brilliant and glossy dark rose-coloured flowers. The stems are slightly angular and furrowed. The leaves are cordate, and very slightly three-lobed. The peduncles, or flower-stalks, are tinged with purple, and the calyx is surrounded by a large involucre, consisting of three cordate leaflets, united at the base. This leafy involucre distinguishes both the flower and the capsule of the *Malope* at first sight from those of all the kinds of *Malva*. The cone-like shape of the capsule is also very distinct from the round, flat cheeses of the *Mallow*.

The large-flowered variety, *Malope grandiflora*, well merits its name; for the flower we have figured, which we had from Lee's nursery, is only about the average size. The plant also grows three feet or four feet high. In the summer and autumn of 1838, an immense quantity of *Malope grandiflora* was growing in the nursery of Mr. Forrest, at Kensington, where its magnificent flowers produced an effect quite dazzling to the eye. The white-flowered variety, on the contrary, has rather small and very delicate flowers; and it does not grow higher than the species.

Malope trifida is generally said to be a native of Barbary, introduced in 1808; but in the plant catalogue of Mr. Masters, of Canterbury, it is stated that this *Malope* "was introduced in 1806, from the Mauritius, by the writer's father."—(*Hort. Duro.*, 3rd edit. p. 119). It is not known by whom the splendid variety *Malope grandiflora* was raised; but it is certainly one of the handsomest of garden annuals.

The seeds of both the species and varieties may be procured in any seed-shop, and they may either be raised in March in a slight hot-bed, or sown about the middle of April in the open borders; observing that, if the plants are raised in a hot-bed, they should be sown in pots, and transplanted with the ball entire, without disturbing the roots.

2.—MALOPE MALACOIDES, *Lin.* THE MALLOW-LIKE MALOPE.

SPECIFIC CHARACTER.—Leaves ovate, crenated. Stipules oblong-linear. Peduncles axillary, one-flowered.—(*G. Don.*)

DESCRIPTION, &c.—This species has purplish crimson flowers, strongly resembling those of the common Mallows, but with the seed-pod of the Malope. It grows about a foot or eighteen inches high. It is a native of the South of Europe and North of Africa, in meadows, and it was introduced in 1710. The culture is the same as that of *M. trifida*. There is a variety of this species with deeply sinuated, or pinnatifid leaves; but we believe it has not been introduced into England.

GENUS III.

LAVATERA, *Lin.* THE LAVATERA.

Lin. Syst. MONADELPHIA POLYANDRIA.

GENERIC CHARACTER.—Calyx girded by a 3—5 cleft involucre. Leaflets usually connected together to the middle. Carpels capsular, one-seeded, disposed in an orb around the axis.—(*G. Don.*)

DESCRIPTION, &c.—Most of the species of *Lavatera* are shrubby, but the few annual kinds are well deserving of cultivation. The generic distinction consists principally in the leaflets of the involucre being joined to the middle; and in the carpels, which are disposed round the central axis, having it dilated over them. Those who wish to study botanical distinctions, should compare the seed-vessels of the Mallow, the Malope, and the *Lavatera*. Three dry seed-pods are now before us: those of *Malva moschata*, *Lavatera trimestris*, and of *Malope grandiflora*. The seed-vessel of the Musk Mallow consists of a circle of woolly-looking carpels growing close together, but easily detached with a pin; each fitting into a little groove in the axis, round which they are placed. They are in a loose open calyx, without any involucre, and even the small bractea which were below the calyx when the plant was in a growing state, have fallen off. The *Lavatera* has a larger circle in the centre, appearing at first sight to resemble the circle of carpels in the Mallow; but on examination it will be found to be the dilated axis, which, instead of having grooves in it for the reception of the seeds, is stretched over them and curved down so as to form a cover, under the shelter of which the seeds lie completely concealed. The calyx consists of five sepals, which bend down over the centre, and below which is the large, spreading involucre, consisting of three broad leaflets, which grow together half way up. The Malope has a very long calyx and large sepals, which make its seed-vessels bear the same relation to the others as a filbert does to a common nut. The peculiar shape of the involucre and calyx are shown in *figs.* 2 and 6 in plate 16; and when these are opened to examine the seeds, they will be found growing on the receptacle in the shape of a raspberry, something like those of the *Flos Adonis*, or the common Crowfoot.

1.—LAVATERA TRIMESTRIS, *Lin.* THE THREE MONTHLY LAVATERA.

SYNONYME.—*Stegia Lavatera*, *Dec.*

ENGRAVINGS.—*Bot. Mag.* t. 109, and our *fig.* 5, in Plate 16.

VARIETY.—*L.* t. 2. *albiflora*, *G. Don.* has white flowers.

SPECIFIC CHARACTER.—Stem scabrous. Leaves smoothish, roundish, cordate, upper ones lobed. Pedicels solitary. Orb of receptacle perfectly concealing the carpels.—(*G. Don.*)

DESCRIPTION, &c.—The pink and white *Lavateras* are too well known as border flowers, to need any detailed description. They grow from three to six feet high, and their flowers are delicately and beautifully veined. The situation of the seeds has been already described. The plant is found wild in Spain, and also in Syria. It

appears to have been introduced from Spain about 1600, as, though it is not mentioned by Gerard, who wrote in 1597, it is by his commentator Johnson, who wrote in 1633. It was then called the Spanish Summer Mallow. Clusius was the first to apply to it its specific name of *trimestris*. Its seeds may now be procured in any seed-shop. They should be sown in April or May, and when the plants come up, they must be thinned out, so as to leave not more than five or six in a group. In the centre of this group should be placed a stake, to which the plants may be tied loosely, or they may be drawn through a dahlia hoop. They are free-growing plants, and produce abundance of flowers; but they are rather too large for a small garden unless they are kept neatly trained.

OTHER KINDS OF ANNUAL LAVATERA.

The following kinds are well deserving of cultivation; but we have never seen them in gardens, and do not know where to procure seeds.

L. FLAVA, *Desf.*

This kind has yellow flowers. It is a native of the north of Africa and Sicily. It was introduced in 1818, but is now apparently lost.

L. PUNCTATA, *All.*

is a native of the south of France and north of Italy, where it is found in cultivated fields. It has pale violet flowers, and was introduced in 1800.

L. CRETICA, *Lin.*

This species has pale rose-coloured flowers, with a fringed margin to the petals. It is a native of Crete, and was introduced in 1723.

L. AMBIGUA, *Dec.*

has purple flowers. It is a low plant, and grows wild near Naples. It was introduced in 1821.

GENUS IV.

HIBISCUS, *Lin.* THE HIBISCUS.

Lin. Syst. MONADELPHIA POLYANDRIA.

<p>GENERIC CHARACTER.—Calyx girded by a many-leaved, rarely few-leaved involucre, distinct or connected with each other at the base. Petals not auricled. Stigmas five. Carpels joined into a 5-celled</p>	<p>capsule, with the valves bearing a dissepiment on the inside. Cells many, rarely 1-seeded. Seeds woolly or smooth.—(<i>G. Don.</i>)</p>
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DESCRIPTION, &c.—Most of the annual plants belonging to this genus can only be grown in England in the stove, and we have therefore omitted them; but an idea may easily be obtained of them from those we shall describe, as they bear a very strong family likeness to each other. The genus *Hibiscus* is botanically distinguished from the other *Malvaceæ*, by the very different shape of its seed-vessel. This consists of five carpels grown together into one capsule, which has the seeds it contains arranged along five valves.

1.—HIBISCUS TRIONUM, *Lin.* THE COMMON OR BROAD-LEAVED BLADDER KETMIA.

ENGRAVING.—Bot. Mag. t. 209.

<p>SPECIFIC CHARACTER.—Leaves toothed, lower ones almost undivided,</p>	<p>upper ones 3-parted, blunt. Lobes lanceolate, with the middle one very long. Calyx inflated, membranaceous, full of nerves.—(<i>G. Don.</i>)</p>
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DESCRIPTION, &c.—The flower of the Common Bladder Ketmia is about the size of that of the Musk Mallow, and it is of a delicate cream-colour, with a purple centre; and the anthers are of a rich golden hue. The stem is

weak, and if not supported will lie on the ground. The leaves are broad and three-parted, whence the specific name of *trionum*. The capsules are inflated, and it is from them that the epithet bladder is applied to the plant. *Ketmia* is from the Arabic name of the mallow. This species is a native of Italy and Carniola; it was first called the Venice Mallow, or Good-night-at-Noon, in allusion to the short duration of its flowers, which were supposed to drop exactly at noon. It is mentioned by Parkinson and Gerard; and as the latter speaks of it in the first edition of his Herbal as well known, it must have been introduced some years before 1596. The culture is very simple, as the seeds may be sown at any time when the ground is not hard with frost, and the plants will not need either thinning out or tying up, as they look best sown thickly, and with their stems lying on the ground. Seeds are common in every seed-shop.

2.—HIBISCUS AFRICANUS, *Thun.* THE AFRICAN BLADDER KETMIA.

SYNONYME.—*Hibiscus vesicarius*, *Cav.*, *H. Trionum*, var. *africanus*,
Mill. Dict.

ENGRAVING.—Our *fig.* 1, in Plate 16.

SPECIFIC CHARACTER.—Leaves toothed, lower ones undivided, upper ones 5-cleft, with oblong, blunt lobes. Calyx inflated, membranaceous, full of nerves.—(*G. Don.*)

DESCRIPTION, &c.—This very beautiful flower is so superior to the common Bladder Ketmia, that it has nearly superseded it in gardens. The petals are of a very pale yellow, or rich cream-colour, and the blotch at the base of each is of a very rich reddish-brown. The species is a native of Africa, particularly near the Cape of Good Hope, where it is a shrub. It was first introduced in 1713, and has been frequently lost to our gardens, from its inability to ripen its seeds without abundance of heat. The last date given for its re-introduction is 1826. It requires a light sandy soil; and when it comes up, it may either be thinned out and tied up, or left to flower as it grows, like *H. trionum*. Mr. Forrest, of the Kensington Nursery, has a variety with larger flowers than the species.

GENUS V.

PALAVIA, *Cav.* THE PALAVIA.

Lin. Syst. MONADELPHIA POLYANDRIA.

GENERIC CHARACTER.—Calyx naked, 5-cleft. Carpels capsular, numerous, 1-seeded, disposed into a head without any order. — (*G. Don.*)

1.—PALAVIA RHOMBIFOLIA, *Graham.* THE RHOMBOID-LEAVED PALAVIA.

ENGRAVINGS.—*Bot. Reg.* t. 1375; *Bot. Mag.* t. 3100, and our *fig.* 3, in Plate 16.

SPECIFIC CHARACTER.—Leaves rhomboidal, lobately-erect, stel-

lately-pilose on the veins, shorter than the peduncles. Stipules awl-shaped, ciliated, green. Petals obovately cuneate, obliquely-emarginate. Peduncles longer than the leaves.—(*G. Don.*)

DESCRIPTION, &c.—A little delicate plant, with a flower of no great beauty, resembling a common Mallow. It is a native of Peru, near Lima, from which country, seeds were sent sent home by Mr. Cruickshanks in 1830. It requires a warm situation and a light sandy soil; and its flowers, though short-lived, are produced in great abundance. Seeds may be procured in any of the London seed-shops.

OTHER KINDS OF PALAVIA.

There are two other kinds of *Palavia*, both natives of the sandy plains near Lima. One of these, *P. moschata*, has yellow flowers, turning purple as they fade; and the other, *P. malvæfolia*, has small red flowers. Both are said to have been introduced, but we do not know where seeds of them are to be procured.



1. *Cypripedium flavum*. 2. *Cypripedium viscosissimum*. 3. *Cypripedium lanceolatum*.

CHAPTER XVI.

LYTHRACEÆ.

ESSENTIAL CHARACTER.—Calyx tubular, ribbed, the sinuses between the lobes sometimes lengthened out into the other lobes. Petals 4—6, inserted into the tube of the calyx. Stamens inserted in the tube below the petals, variable in number. Capsule covered by the tube of the calyx, 1-celled, placeuta central.—(*G. Don.*)

DESCRIPTION, &c.—The order *Lythraceæ* contains several interesting plants, and among others, the Henna (*Lawsonia inermis*), so much used by ladies in the East, the Lagerstrœmias, or Pride of India, and the plant supposed by some to be the Rosewood of commerce, *Physocalymna floribunda*. The only genera containing annual flowers are *Lythrum* and *Cuphea*. The annuals in the first genus are wild British plants, and only those belonging to the genus *Cuphea* are cultivated in gardens. Even these plants are by no means beautiful, as they have all that peculiarly dark reddish and yet blackish purple, which has made the name of the order be derived from the word *lythron*, black blood.

GENUS I.

CUPHEA, *Jacq.* THE CUPHEA.

Lin. Syst. DODECANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx tubular, 12-toothed. Petals 6—7, unequal. Stamens 11—14, rarely 6—7, unequal, inserted in the orifice of the calyx. Capsule 1—2-celled.—(*G. Don.*)

DESCRIPTION, &c.—The plants composing the genus *Cuphea* were separated from those forming the genus *Lythrum*, chiefly because the former have a tubular calyx and unequal petals, while the latter have not a tubular calyx, and the petals are equal. There is likewise a difference in the stamens, and in the capsule.

1.—CUPHEA VISCOSISSIMA, *Jacq.* VERY CLAMMY CUPHEA.

SYNONYMS.—*Lythrum petiolatum*, *Lin.* *L. Cuphea*, *Lin. fil.* pubescence, hispid. Leaves opposite, petiolate, ovate-lanceolate, rather scabrous. Flowers pedicellate, solitary, deflexed. Calyx 6-toothed, clothed with clammy down. Petals 6, unequal.—(*G. Don.*)

ENGRAVINGS.—Brit. Flow. Gard. t. 60; and our *fig.* 2, in Plate 17.

SPECIFIC CHARACTER.—Stem erect, branched, clothed with clammy

DESCRIPTION, &c.—An erect plant, growing from a foot to eighteen inches high, with a dark purple stem, and pale dull purple flowers. The stem is branched, and the whole plant is covered with clammy hairs. The flowers begin to appear when the plant is not above six inches high, and as it continues growing, the flowers continue expanding. It is found wild in America, from Brazil to Pennsylvania, in humid shady places. It was introduced in 1776. The seeds are generally raised on a hotbed, and planted out into a moist shady border in June; or they may be sown in the open air in April.

2.—CUPHEA PROCUMBENS, *Cav.* THE PROCUMBENT CUPHEA.

ENGRAVINGS.—Bot. Reg. t. 182.

SPECIFIC CHARACTER.—Stem assurgent. Branches procumbent, clothed with clammy hairs. Leaves opposite, on short petioles, ovate-lanceolate, rather hispid. Flowers pedicellate, solitary, deflexed. Calyx clothed with clammy hairs, 6-toothed. Petals 6, obovate, two larger than the rest. The two largest stamens are woolly beyond the anthers.—(*G. Don.*)

DESCRIPTION, &c.—The petals of the flowers are rose-coloured, and the calyx is of a reddish purple, or rather lilac tinge, tipped with green. The stem is slender, and it is covered with a purplish pubescence; it is only

partly procumbent. The flowers are numerous, loose, and terminating the stem and branches in leafy racemes. The species is a native of Mexico, and was first raised in Europe by Professor Cavanilles, in the garden of the Buen Retiro, at Madrid. It was afterwards grown in the Berlin Botanic Garden, whence it was sent both to the Botanic Garden, Chelsea, and to the Fulham Nursery, in 1816. The seeds should be raised on a hotbed in April, and the young plants planted out into a moist, rich, shady border, in June.

3.—CUPHEA LLAVEA, *La Llave et Lexarsa*. LA LLAVE'S CUPHEA.

ENGRAVINGS.—Bot. Reg. t. 1386; and our *fig. 1*, in Plate 17.
 SPECIFIC CHARACTER.—Stems numerous, hispid. Branches ascending. Leaves almost sessile, ovate-lanceolate, strigose. Pedicels inter-
 foliaceous, erect. Petals two, obovate, large, the rest abortive. Stamens eleven.—(*G. Don.*)

DESCRIPTION, &c.—The petals of the flowers are of a dark scarlet; the calyx has a greenish front, and the back and throat are pinkish. Three of the stamens are very long. Only two of the petals are conspicuous, the others being so small as to be scarcely visible. The stems are numerous, erect, taper, and about a foot and a half high. It is a native of the mountains of Central Mexico, where it was discovered by La Llave flowering in March and April. It was introduced into England by Mr. Ackermann in 1829, who gave the seeds to Mr. Tate, in whose nursery they flowered the following August. It is properly a perennial; but as it will not live through the English winter in the open air, it does best treated as an annual. It may either be sown in a hotbed in February, and planted out in May, in which case it will flower in June, or be sown in the open air in April, when it will flower in August.

4.—CUPHEA LANCEOLATA, *Ait.* THE LANCEOLATE-LEAVED CUPHEA.

SYNONYME.—? *C. silenoides*, *Hort.*
 ENGRAVINGS.—Brit. Flow. Gard., 2nd Ser. t. 402; Floral Cabinet, vol. ii. p. 161; and our *fig. 3*, in Plate 17.
 SPECIFIC CHARACTER.—Stem erect, clothed with clammy pubescence. Leaves opposite, on short petioles, lanceolate, rather pilose. Flowers pedicellate, solitary, deflexed. Calyx beset with clammy pili, 6-toothed. Petals 6, obovate, two of which are larger than the rest; the two longer stamens are woolly beyond the anthers.—(*G. Don.*)

DESCRIPTION, &c.—The whole plant is clothed with soft, clammy, purple hairs, and it has a powerful fragrance; the stem is erect and branched, with ascending branches. The leaves are lanceolate, and pale green on both sides. The root is fibrous. The flowers are solitary; the petals are of a very dark black-blood colour, with white claws, and the calyx is greenish. The flower is certainly much handsomer than that of any other kind of *Cuphea*; but still it is more curious than beautiful. *Cuphea lanceolata* is a native of Mexico, and was first introduced by Mr. Anderson, Curator of the Botanic Garden, Chelsea, in 1796; it was, however, soon after lost, till it was re-introduced about 1836, by Messrs. Osborn, of the Fulham nursery, who received the seeds from Messrs. Booth, of Hamburgh. It was first supposed to be a stove plant; but the specimen from which our plate was taken grew in the open border in the Fulham nursery, without the slightest protection. The culture is the same as that of the other species.

OTHER SPECIES OF CUPHEA.

There are several other annual species of *Cuphea*, mostly natives of Mexico, which have not yet been introduced; but which, from the descriptions which have been given of them, appear well deserving of introduction. Though not at all showy, they are curious; and though natives of a warm climate, they are found to succeed perfectly well in the open air in Britain.



1. *Galatarrhena speciosa* 2. *Galatarrhena discolor* 3. *Galatarrhena speciosa*
 4. *Galatarrhena speciosa* 5. *Thymophyllum pomoridianum* 6. *Thymophyllum tricolor*

CHAPTER XVII.

FICOIDEÆ.

ESSENTIAL CHARACTER.—Sepals definite, combined at their bases. Petals indefinite, rarely wanting. Stamens numerous, distinct, perigynous. Ovary many-celled, inferior or superior. Stigmas distinct. Capsule dehiscing in a stellate manner at apex.—(*G. Don.*)

GENUS I.

MESEMBRYANTHEMUM, *Lin.* THE FIG MARIGOLD.

Lin. Syst. ICOSANDRIA TETRA-POLYGYNIA.

GENERIC CHARACTER.—Calyx of 5, rarely of 2—3 sepals. Petals indefinite, linear. Stamens indefinite, inserted in the top of the calyx along with the petals. Capsule adnate to the calyx, from four to many-celled. Cells many-seeded.—(*G. Don.*)

DESCRIPTION, &c.—The name of *Mesembryanthemum* is derived from *mesembria*, mid-day, and *anthemum*, a flower; and this name admirably expresses the habit of the plants. Their flowers seem to live only in the sun. When the sun withdraws its beams, they close their petals, and only expand them in the brilliant light of a summer's day. "I scarcely know a more interesting sight," says Dr. Lindley, in his admirable *Ladies' Botany*, "than in a summer's day, after a storm, to watch a bush of this genus, which has thrown its weak trailing arms over a piece of rock, and which leans forward to the south, as if to catch the earliest influence of the beams it loves so well. While the sky is darkened by clouds, all its blossoms are shut up so closely, that one would hardly suspect the bush of being more than a tuft of leafy branches, with some withered or unexpanded blossoms scattered over them. But the moment that the bright rays of the sun begin to play upon the flowers, the scene changes visibly beneath the eye; the petals slowly part, and unfold their shining surfaces, of almost metallie brilliancy, to the sunbeams, and in a few minutes become so many living stars, often of the most gorgeous tints, and so entirely hide the leaves, that scarcely a trace of them is visible, while the whole bush has burst into a blaze of glittering splendour. In this case, the phenomenon depends on a specific irritability of the petals, the cause of which is one of those inscrutable mysteries that the limited faculties of man are incapable of penetrating; but in the fruit, there is an interesting phenomenon of another kind, the cause of which is more easily explained. The seed-vessels of the Fig Marigold, produced in the sandy deserts of Southern Africa, fall off when ripe, and are driven about by the wind. If they were to open during the wet season, or in wet places, the seeds would fall out and perish, for it is only in a dry soil that they are capable of vegetating. Nature, therefore, gives this plant the power, by virtue of its hygrometrical quality, of keeping the seed-vessel fast shut up while exposed to damp; and it is only when it finds itself in a dry station fit for the dissemination of the seeds, that the valves contract and open sufficiently to allow the latter to escape."—(*Ladies' Botany*, vol. ii. p. 64.) The fruit of the *Mesembryanthemum* is shaped like a fig, and is eaten by the Hottentots; hence the name of Fig Marigold. The leaves are extremely succulent, and those of some of the species are eaten. The *Mesembryanthemums* are nearly all natives of the hot sandy plains near the Cape of Good Hope.

1.—MESEMBRYANTHEMUM POMERIDIANUM, *Lin.* THE LARGE YELLOW-FLOWERED FIG MARIGOLD.

ENGRAVINGS.—Bot. Mag. t. 540; and our *fig.* 5, in Plate 18. SPECIFIC CHARACTER.—Leaves broad-lanceolate, flat, smooth, ciliated, | nearly distinct. Stems, peduncles, and calyxes, hairy. Petals shorter than the calyx. Stigmas 12.—(*G. Don.*)

DESCRIPTION, &c.—One of the most splendid of this beautiful tribe of flowers. The broad, thick, fleshy

leaves, and large sun-like flowers, produce a most striking effect. It is a native of the Cape of Good Hope, and was introduced in 1774, by Mr. Masson, who brought many plants from that colony. The seeds should be sown on a hotbed in March or April, and the young plants planted out in June, into a dry sandy or gravelly soil, in the open ground, or on rockwork. The plants thus treated, and allowed plenty of light and air, will produce a profusion of flowers, which, from their size and brilliant colour, will have a dazzling effect, and will ripen seed abundantly. This species requires to be planted in the open ground, as it never flowers well in a pot.

2.—MESEMBRYANTHEMUM CRYSTALLINUM, *Lin.* THE COMMON ICE-PLANT.

SPECIFIC CHARACTER.—Plant diffusely procumbent, herbaceous, | plant appear as if covered with ice. Leaves ovate, alternate, stem-covered with large glittering papulæ on every part, which makes the | clasping, undulated. Flowers axillary, almost sessile.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of this species are white, and they are neither so large nor so showy as those of *M. pomeridianum*. The ice plant is, however, remarkable for the little globular protuberances, or rather blisters, filled with a soft, watery matter, which glisten over the whole plant, and make it look as though it were covered with ice. The plant is procumbent. This species is a native of Europe, as well as Africa; for it is found on the sandy shores of Greece, near Athens, and in the Canary Isles. It was introduced in 1775. Its culture is nearly the same as that of *M. pomeridianum*, though it does not succeed so well in the open border, very frequently failing to produce flowers. Some persons account for this, by supposing that there are two varieties of this species, one a biennial, which is the true *M. crystallinum*, and the other an annual, which is called by Haworth *M. glaciale*. The best way is to grow the plant in very poor soil, or on rockwork, where its glistening leaves and starry flowers produce a very good effect.

3.—MESEMBRYANTHEMUM PINNATIFIDUM, *Lin.* THE PINNATIFID-LEAVED ICE PLANT.

ENGRAVING.—Bot. Mag. t. 67.

SPECIFIC CHARACTER.—Stems diffuse. Leaves opposite, oblong, bluntly pinnatifid, papulose. Petals shorter than the calyx.—(*G. Don.*)

DESCRIPTION, &c.—Perhaps the least beautiful of this showy family of plants. The leaves are what is sometimes called fiddle-shaped, and though covered with icy globules, they have not the brilliant glistening appearance of those of the common ice-plant. The flowers are yellow, but small, and produced in the forks of the branches; the stems are reddish. The plant is a native of the Cape of Good Hope; but it is said to be found also in Chili. It was introduced in 1774.

4.—MESEMBRYANTHEMUM TRICOLOR, *Willd.* THE THREE-COLOURED OR PURPLE-EYED MESEMBRYANTHEMUM.

ENGRAVINGS.—Bot. Mag. t. 2144; and our *fig.* 6, in Plate 18.

SYNONYME.—*M. Pyropeum*, var. *roseum*, *Dec.* *M. roseum*, *Haw.*

SPECIFIC CHARACTER.—Plant almost stemless. Leaves linear,

broadest at the apex, obtuse, rather scabrous from papulæ. Flowers pedunculate. Lobes of calyx 5, oblong, one of them very long.—(*G. Don.*)

DESCRIPTION, &c.—A very small species with scarcely any true stem, and deriving nearly all its height from the long upright footstalk of the flower. The petals are pink, becoming whitish at the base, and the anthers are of a very dark purple, almost black. It is not known exactly of what country it is a native, but it is supposed to come from the Cape of Good Hope. Seeds of it were sent by M. Otto, of Berlin, to Mr. Anderson of the Chelsea Botanic Garden, about 1828.

OTHER SPECIES OF ANNUAL MESEMBRYANTHEMUM.

There are many other species of annual *Mesembryanthemum* mentioned in books ; but as we know nothing of them except their specific characters, we have not thought it necessary to give even their names. The colours of their flowers are stated to be purple, white, rose-colour, and yellow ; and many of them are said to have been introduced.

CHAPTER XVIII.

PORTULACEÆ.

ESSENTIAL CHARACTER.—Calyx usually of two sepals. Petals usually 5, seldom more or less. Stamens variable in number, perigynous. Anthers appendiculate. Style one. Stigmas many. Capsule 5-celled, opening by a lid or 3 valves. Placenta central. Seeds winged.—(*G. Don.*)

DESCRIPTION, &c.—Succulent plants, many of which have thick, fleshy leaves, and bright-coloured flowers. Some of the kinds, however, are British weeds, such are the water-chickweed, and the common purslane, the latter of which was formerly eaten as a salad. All the plants belonging to this order thrive best in hot dry exposed places. The only genera that contain ornamental annuals are *Calandrinia* and *Claytonia*.

GENUS I.

CALANDRINIA, *Kunth.* THE CALANDRINIA.*Lin. Syst.* DODECANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx 2-parted. Petals 3—5, free or rather connate at the base. Stamens 4—15. Style one, very short, tripartite at the apex. Lobes clavate. Capsule oblong-elliptic, 3-valved. Seeds wingless.—(*G. Don.*)

DESCRIPTION, &c.—The ornamental species belonging to this genus are mostly natives of South America, and like the mignonette and many other plants, shrubby there, though in Britain they are treated as annuals. There are some of the South American species that are positively annuals, as they can never be preserved through the winter ; and this is also the case with *C. speciosa*, which is a native of North America. A great degree of confusion exists as to the names ; the *Calandrinias* of the Bot. Mag. being quite different from those bearing the same names in the London gardens, and figured by Dr. Lindley in the Bot. Reg. We, however, have adopted the names and descriptions given in the latter work. The name of *Calandrinia* was given to this genus by Kunth, in honour of L. Calandrini, an Italian botanist, who lived in the beginning of the eighteenth century.

1.—CALANDRINIA PILOSIUSCULA, *Dec.* THE HAIRY CALANDRINIA.

SYNONYMES.—*Talinium ciliatum*, *Hook.* *T. lineare*, *Hoff.* *Calandrinia compressa*, *Schrad.* *C. tenella*, *Hook* and *Amb.* Leaves linear-spatulate, rather pilose. Pedicels axillary, 1-flowered, rather adnate to the floral leaves, constituting a terminal or sub-terminal panicle.—(*G. Don.*)

SPECIFIC CHARACTER.—Stems erectish, angular, rather pilose. DESCRIPTION, &c.—This was the first species of the genus known in England ; and it was introduced under the name of *Talinium ciliatum* ; the difference indeed between the two genera is very slight, the principal distinction being, that the style in *Calandrinia* is very short, while in *Talinium* the style is filiform. The hairy *Calandrinia* has small flowers of a purplish crimson. Its stem is short, and partly procumbent, and its leaves are long

and narrow. It is a native of Chili, from which country seeds of it were received in 1823 by Mr. Place, and by him presented to the London Horticultural Society, in whose garden it flowered for the first time in 1824. The seeds were sown in a hotbed in March, and transplanted into the open ground at the beginning of May; the flowers began to appear early in June, and continued till destroyed by the frosts of autumn. It requires a hot, dry, sandy situation, and it is admirably adapted for rockwork. Seeds may be procured in any of the seed-shops.

2.—CALANDRINIA SPECIOSA, *Lindl.* THE SHOWY CALANDRINIA.

ENGRAVINGS.—Bot. Reg. t. 1598; and our *fig.* 1, in Plate 18.

SPECIFIC CHARACTER.—Glabrous, diffuse. Leaves spatulate, acute, elongated and narrowing at the base, so as to appear petiolated.

Flowers racemose, pedicels and bracteas very short. Petals longer than the calyx.—(*Lindl.*)

DESCRIPTION, &c.—Few flowers have a more striking effect than this little *Calandrinia* with its brilliant dark crimson or rather maroon-coloured flowers, peeping out from its thick bed of leaves. There was a large bed of it in Mr. Hopgood's garden in the summer of 1838, which in the morning presented as rich a mass of flowers and leaves as could well be imagined, but by four o'clock every little flower was closed. With the exception of the early closing of the petals, this species deserves to be generally cultivated, as nothing can exceed the rich velvety look of the flowers. It is quite hardy, a true annual, and ripens its seeds in great abundance. It is a native of Northern California, whence its seeds were sent home in 1832 by Douglas. It should be sown in dry and exposed situations, where it can have abundance of light and heat; as the situation in which Douglas found it was a hot, dry bank. It requires very little water, and flourishes best in weather when most other plants are burnt up. It is well adapted for rockwork. It may be sown twice; in March or April to flower in May and June, and in May or June to flower in August and September. Seeds may be had in all the seed-shops.

The plant figured under the name of *Calandrinia Speciosa*, in the Bot. Mag., t. 3379, bears more resemblance to *C. grandiflora* than to the plant described in the Bot. Reg. as *C. speciosa*. Sir W. J. Hooker states that he received it under the name of *C. speciosa* from the Epsom nursery, and that he does not know its native country; it is probable that it is a native of Chili, like the other species of the genus which it resembles, but from its woody stem and general appearance it is quite evident that it cannot be the Californian annual described above.

3.—CALANDRINIA ARENARIA, *Hook. et Arnott.* THE SAND CALANDRINIA.

ENGRAVINGS.—Bot. Reg. t. 1605; and our *fig.* 3, in Plate 18.

SPECIFIC CHARACTER.—Plant glaucous. Stems numerous, prostrate, glabrous, leafy. Leaves linear. Common peduncle terminal, naked,

simple or branched. Racemes corymbose; and pedicels a little longer than the bracteas. Bracteas oval, membranous, pointed by a dark purple branched middle nerve. Seeds glabrous.—(*G. Don.*)

DESCRIPTION, &c.—A little weedy-looking flower, only remarkable for the curious markings of its calyx and bracteas. It is a native of the sandy plains near Valparaiso, whence it was introduced by Mr. Hugh Cumming in 1833. It is quite hardy, and produces abundance of seeds, which will flower in two months after sowing.

4.—CALANDRINIA GRANDIFLORA, *Lindl.* THE LARGE-FLOWERED CALANDRINIA.

ENGRAVINGS.—Bot. Reg. t. 1194; Bot. Mag. t. 3369; and our *fig.* 4, in Plate 18.

SPECIFIC CHARACTER.—Plant glaucous. Leaves fleshy, rhomboid,

acute, petiolate. Raceme simple, loose. Calyx spotted. Stamens numerous. Petals obovate.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of this species were so much larger than those of the earliest-introduced kinds of *Calandrinia*, that Dr. Lindley gave it the name of *grandiflora*, a name which now seems ill applied,

as the flowers of *Calandrinia discolor* are more than twice as large. *C. grandiflora* makes a bushy, glaucous plant, with round, thick stems, and very succulent leaves, which are broad, but terminate in a sharp point, and are so much elongated and tapering at the base as to seem petiolated. The flowers are produced on long racemes, on which they are disposed at considerable distances from each other, and each on a long footstalk. When the flowers are in the bud, and again after the petals have fallen, these footstalks droop; but when the flowers expand, which they do only one at a time, each pedicel in turn stands erect. The flowers are of a faded rose-colour, and not large, notwithstanding the name. The calyxes are spotted; and they do not drop off when the petals of the flower fade, but close, in a very peculiar manner, over the germen. Though generally treated as an annual, this species is properly a perennial, and if preserved through the winter it will in time become shrubby. The flowers remain open only during sunshine. This species is a native of Chili, from which country seeds of it were brought to the London Horticultural Society by Mr. M'Rae, in 1826. It requires a warm, dry, calcareous soil, and not too much water, as if over watered it will soon damp off, or, in other words, become rotten just at the collar of the plant. When treated as an annual, it is generally raised on a hotbed, and planted out in May, when it will begin to flower in June, continuing to produce a succession of flowers the whole summer. When treated as a greenhouse plant, it is propagated by cuttings, and kept very dry during winter.

5.—CALANDRINIA DISCOLOR, *Lindl.* THE DISCOLOURED CALANDRINIA.

ENGRAVINGS.—Bot. Reg. t. 1838, 4; ? Bot. Mag. t. 3357; and our fig. 2, in Plate 18.

SPECIFIC CHARACTER.—Leaves fleshy, obovate-obtuse, elongated into a petiole. Raceme bending, the pedicel drooping after the falling of

the petals. Petals much longer than the calyx. Nearly allied to *C. grandiflora*; but differing in the leaves being larger and obtuse, in their under side being somewhat discoloured, and in the flowers being much larger.—(*Lindl.*)

DESCRIPTION, &c.—One of the most splendid flowers grown in British gardens, and certainly by far the handsomest species of *Calandrinia*. The flowers are rose-coloured, with a tinge of purple on the under side; they are very large, and extremely ornamental from the rich mass of golden-coloured anthers in the centre. The flowers are produced in the same manner as those of *C. grandiflora*, on similar long racemes, at the same, or even greater distances from each other, and the flower-stalks droop in the same remarkable manner when the flowers fade, the spotted calyx closing over the remaining petals of the faded flower and the swelling germen. The leaves are very thick and fleshy, and they are of a strangely mottled colour, from which the species is said to take its name of *discolor*. The numerous and vigorous-growing stems, the thick leaves, and the long racemes of flowers, give this plant a very peculiar appearance; and no one who sees it for the first time could suppose it possible for so massive-looking a bush to spring from the little shining black seed, in the course of a single summer. Though like *C. grandiflora*, it is said to be properly a perennial, or rather, half shrubby, it succeeds perfectly well as an annual. It is not known of what country it is a native, but from the great similitude between it and *C. grandiflora*, it is probably also from Chili. Its seeds were sent to the London Horticultural Society from the Berlin Botanic Garden, in 1835; and, as it seeds freely, they are now common in every seed-shop. The plant figured in the *Bot. Mag.* t. 3359, appears to be a different species. The flowers are shaped like those of *C. grandiflora*; the leaves are very long, rather narrow, and of a bright pink on the under side. The seeds were received at the Glasgow Botanic Garden, from the late Mr. Fischer, of the Botanic Garden, Gottingen, in 1824, under the name of *C. discolor*, but the native country of the plant, or any other particulars, were not mentioned.

The seeds of the *Calandrinia discolor* of the London gardens are generally sown in March, on a hotbed, potted off when they come up into small pots, and afterwards transplanted into the open border in May; or the seeds may be sown in the open border in May, the only difference being that the first-sown plants will flower earlier, though so little as scarcely to be worth the trouble of transplanting, &c. This species requires a rich calcareous soil, and an open sunny situation. We sowed some seeds obtained from Mr. Charlwood, in May 1838, in the open ground, in a warm border, sheltered by a wall; and the plants grew luxuriantly, being from a foot and a half to two feet high. The flowers began to expand in July, and in August we had a most brilliant display, which continued till the first frost, which, though a very slight one, destroyed the Calandrinias completely in a single night. When young, the Calandrinias are also liable to be killed by the slightest frost; and for this reason, in gardens where there is but little shelter, it is always safest to raise the plants on a hotbed.

OTHER SPECIES.

These are very numerous; but we believe that no others have been as yet introduced that can be treated as annuals.

GENUS II.

CLAYTONIA, *Lin.* THE CLAYTONIA.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Sepals 2, permanent. Petals 5, unguiculated; claws connate at the base. Stamens 5. Style 1, trifid at the apex. Lobes stigmatose inside. Capsules 3-valved, 3-seeded.—(*G. Don.*)

DESCRIPTION, &c.—Succulent plants with small flowers, usually white or rose-coloured; which, as they are certainly not worth cultivating for their beauty, we shall only say a few words of, without entering into details.

1.—CLAYTONIA PERFOLIATA, *Don. Bot. Mag.* t. 1336.

This species was discovered on the North-west coast of North America, by Archibald Menzies, Esq., and sent by him to the Kew Gardens, in 1796. The flowers are white, and very small; and the leaves, which are rather short and broad, are eatable, like those of the common Purslane.

2.—C. ALSINOIDES, *Sims, Bot. Mag.* t. 1309.

This species resembles the common Chickweed, except in its succulent leaves. A native of North America, introduced in 1794.

3.—C. SIBERICA, *Sims, Bot. Mag.* t. 2243; *Sweet, Brit. Flow. Gard.* t. 16. C. ALSINOIDES, var. ROSEA, *Dec.*

A dwarf plant, not growing above six inches high, with pink flowers; very suitable for rockwork. A native of Nootka Sound, and said also to be found wild in Siberia. Introduced in 1820, and worth cultivating.

4.—C. GYPSOPHILOIDES, *Fisch. et Mey.; Brit. Flow. Gard.*, 2nd Ser. t. 375.

A native of the Russian colony of Ross, in California, whence seeds were first sent to St. Petersburg, and thence, in 1837, to England. It is low-growing, with a great number of grass-like stems, and a profusion of very small bright pink flowers. All the Claytonias require a dry sandy soil, and the last two are worth cultivating for rockwork.



1. *Silene quinquemulnora*.—2. *Silene pendula*.—3. *Silene purpurea*.—4. *Silene Armonia*
 5. *Silene vespertina*.—6. *Silene picta*.—7. *Saponaria vaccaria*.

CHAPTER XIX.

SILENACEÆ.

ESSENTIAL CHARACTER.—Calyx 5-toothed, 5-cleft or 5-parted, or of 5 sepals. Petals 4—5, unguiculate, rarely absent. Stamens 4—5, or 8—10, hypogynous. Capsule 2—5-valved, 1—5-celled; placentæ central. Nodose articulated herbs; leaves simple, opposite, or verticillate, rising from the nodi.—(*G. Don.*)

DESCRIPTION, &c.—The order to which the pink and the carnation belong, cannot fail to be an interesting one to every grower of flowers; and, though the annual species it contains are very inferior in beauty to the perennial ones, they are yet all ornamental, and all worth cultivating, either for the open border, or for rock-work. This order formed part of *Caryophyllæ*, according to Jussieu; but that order has been, by modern botanists, divided into *Silenaceæ* and *Alsineæ*; the former comprising all the genera the flowers of which have clawed petals, like the pink; and the latter those having flowers the petals of which are not clawed, like the chickweed. The principal genera belonging to this order that contain annual flowers, are, *Silene*, *Saponaria*, *Gypsophila*, *Dianthus*, and *Agrostemma*.

GENUS I.

SILENE, *Lin.* THE SILENE, OR CATCH-FLY.

Lin. Syst. DECANDRIA TRIGYNIA.

GENERIC CHARACTER.—Calyx tubular, 5-toothed, naked. Petals 5, of petal-like bifid scales in the throat. Stamens 10. Styles 3. Cap-
 unguiculate, with an entire or bifid limb, usually furnished with a crown | sules 3-celled at the base, opening at the top, 6-toothed.—(*G. Don.*)

DESCRIPTION, &c.—Nearly all the species of this genus have a viscid, frothy moisture on their stalks, in which it is said flies are easily entrapped, and hence their popular English name of Catch-fly. Part of the species are perennial, and many of them are common British weeds. All the kinds bear a very strong family likeness to each other; so much so indeed, that when several species are grown in the same garden, they give it an air of monotony. All the annual kinds are very hardy, and require but little culture, except taking care to sow them where they are to remain, as they do not well bear transplanting; and sowing the seeds rather thinly, as they keep well, and will nearly all vegetate. None of the species have any pretensions to be called handsome, but they are most of them pretty.

1.—SILENE VESPERTINA, *Retz.* THE EVENING SILENE.

SYNONYMES.—*S. bipartita*, *Desf.*; *Lychnis prostrata*, *Hort.*

ENGRAVINGS.—*Bot. Mag.* t. 677, *Swt. Brit. Flow. Gard.* t. 11, and
 our *fig. 5*, in Plate 19.

SPECIFIC CHARACTER.—Pubescent; stems branched, diffuse. Leaves
 spatulate, acute, on ciliated petioles. Racemes secund. Calyx bladder-
 clavated. Petals 2-parted. Lobes obtuse.—(*G. Don.*)

DESCRIPTION, &c.—This species has rose-coloured flowers, and diffuse decumbent stems; and it is remarkable for the abundance and duration of its flowers. It is a native of Morocco, where it was discovered by Desfontaines; but it has also been found wild in corn-fields in Portugal and Greece. It was introduced in 1796. On the 12th of June last we had the pleasure of seeing the beautiful flower-garden of R. H. Jenkinson, Esq., at Norbiton Hall, and we were so much struck with the rich effect produced by masses of this plant on the lawns, that we do not hesitate strongly to recommend its culture in all similar situations. Like all the *Silenes*, it requires a warm, dry, sandy soil.

2.—*SILENE PENDULA*, *Lin.* THE PENDULOUS SILENE.

ENGRAVINGS.—Bot. Mag. t. 114, and our *fig.* 2, in Plate 19.
 VARIETY.—*S.* p. 2; erectiflora, *Oth.*, syn. *S.* scabriflora, *Brot.*,
 has the flowers erect and purple.

SPECIFIC CHARACTER.—Pubescent, branched, trailing. Leaves ovate-lanceolate. Flowers axillary, pendulous. Calyx inflated. Petals bifid, crowned.—(*G. Don.*)

DESCRIPTION, &c.—A procumbent species, with flesh-coloured flowers. It is a native of the south of Europe, and was introduced in 1731. Its culture is the same as that of the preceding species, and it is well adapted for rock-work.

3.—*SILENE LACERA*, *Sims.* THE FRINGED SILENE.

ENGRAVINGS.—Bot. Mag. t. 2255.

SPECIFIC CHARACTER.—Hispid; leaves ovate-lanceolate, undulated, on long foot-stalks. Calyxes greatly inflated. Petals jagged, with the appendages two-parted. Alternate stamens, deflexed.—(*G. Don.*)

DESCRIPTION, &c.—A very handsome procumbent species, with white cut flowers, suitable for rock-work. It is a native of Caucasus, where it grows on rocks. It was introduced in 1818; but, as its name is not now in any of the nurserymen's seed catalogues, we fear it has been lost.

4.—*SILENE ATOCION*, *Murr.* THE ATOCION SILENE.

SPECIFIC CHARACTER.—Stem branched, viscid, pubescent. Leaves roundish-ovate, lower ones on long footstalks, upper ones sessile. Panicle fastigiate, trichotomous. Calyx long, clavate. Petals obovate,

obtuse, with an acute tooth on each side at the base, crowned by two protuberances.—(*G. Don.*)

DESCRIPTION, &c.—Rather a showy species, with pink flowers; a native of the Levant, whence it was introduced in 1781. Seeds may be procured in any seed-shop, and they may be sown and treated like those of *Flos Adonis*.

5.—*SILENE PICTA*, *Pers.* THE PAINTED SILENE.

ENGRAVINGS.—Swt. Brit. Flow. Gard. t. 92, and our *fig.* 6, in Plate 19.

SYNONYMES.—*S.* Reinwardtii, *Roth.* *S.* reticulata, *Hort.* *S.* anastomosans, *Lag.* ? *S.* bicolor, *Thore.*

SPECIFIC CHARACTER.—Stems much branched, hardly pubescent. Lower leaves obovate-spatulate; upper ones linear, acute. Flowers loosely paniced. Calyx clavate, striped with red. Petals two-parted, reticulated, crowned.—(*Don.*)

DESCRIPTION, &c.—A very ornamental species, growing about a foot high, with beautifully veined flowers. It is a native of the west of France, near Dax, whence it was introduced in 1817. Seeds may be had at all the seed-shops; and, if sown in May, the plants will flower in August.

6.—*SILENE MUSCIPULA*, *Lin.* THE TRUE CATCH-FLY.

SPECIFIC CHARACTER.—Plant smoothish, clammy. Stem erect. Branches alternate, long. Lower leaves lanceolate-spatulate; upper

ones linear. Flowers paniced. Calyx amply clavated, netted. Petals bifid.—(*G. Don.*)

DESCRIPTION, &c.—The flowers are intensely red; and the leaves and stem so clammy, that when flies light upon it they become entangled, so that this plant is a true Catch-fly. It was indeed this plant that gave the name to the genus, as Clusius, when describing it, called it *Muscipula*, or Catch-fly, from this property. It is a native of Spain; but was introduced into English gardens before 1596.

7.—SILENE ARMERIA, *Lin.* LOBEL'S CATCH-FLY.

SYNONYMES.—*Cueubalus fasciculatus*, *Lam.* ; Wild Sweet William.

ENGRAVINGS.—*Eng. Bot.* t. 1398, and our *fig.* 4, in Plate 19.

VARIETY.—*S. A.* 2 ; *alba*, *Dec.* Flowers white.

SPECIFIC CHARACTER.—Plant quite smooth, glaucous. Stem

branched. Leaves ovate-lanceolate, rather cordate at the base. Flowers in corymbose panicles. Calyx long, clavated. Petals obovate, crowned.—(*G. Don.*)

DESCRIPTION, &c.—A well-known flower, which, without much beauty, has kept its place in our gardens since the earliest period in which we have any record of them. It is mentioned by Gerard, and all the early writers on plants. It derives its popular English name from L'Obel, a native of Flanders, who was botanist to James I. In L'Obel's great work on plants, the *Adversaria*, published in London in 1570, he describes this plant as a kind of *Muscipula*, or Catch-fly ; and as it differs considerably in general appearance from the true Catch-fly (*Silene Muscipula*), which had been previously described by Clusius, it was called L'Obel's Catchfly, in order to distinguish it. It is a native of France and Switzerland, and has been found occasionally in England, on the banks of fields, or on old walls. Its culture is very simple ; as the seeds will come up, and the plants flower well, in almost every kind of soil and situation. The seed is produced in great abundance, and if allowed to ripen on the plant it will sow itself. Like all other flowers this species will, however, be improved by being sown carefully as directed for *Flos Adonis* (see p. 3), and thinned out when the plants come up.

8.—SILENE QUINQUEVULNERA, *Lin.* THE FIVE-WOUNDED CATCH-FLY.

ENGRAVINGS.—*Eng. Bot.* t. 86, and our *fig.* 1, in Plate 19.

SPECIFIC CHARACTER.—Pubescent, viscid. Stems branched. Leaves lanceolate, lower ones obtuse. Spike secund. Calyx very villous,

with short teeth. Petals roundish, entire, with bicuspidate appendages.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of this species, though small, are very pretty, from the dark crimson spot in the centre of each petal. The plant is a native of England, and other parts of Europe, and was formerly a very favourite flower in English gardens. It is now comparatively neglected ; but might still be introduced occasionally, with very good effect. The culture should be the same as that of the other species.

OTHER KINDS OF SILENE.

1.—*S. RUBELLA*, *Lin.*

This is a smooth glaucous plant, with rose-coloured flowers ; a native of Portugal and the Levant ; introduced in 1732.

S. CARNOSA, *Mench.*

A very pretty species, the flowers of which are purple, bordered with white. It is not known of what country it is a native ; but it first appeared in English gardens about 1823.

S. CONICA, *Lin.*

A plant with red flowers, growing wild in England. *S. Conoidea*, *Lin.*, is supposed by some botanists to be a variety of this species ; and there are several other kinds very nearly allied to it.

S. ANGLICA, *Lin.*

This kind is very hairy and viscid. It has white petals, occasionally marked with a red spot in each, like those of *S. quinquevulnera*. It is a native of England and France, and is very common in corn-fields on a gravelly or sandy soil.

S. LUSITANICA, Lin.

Bears considerable resemblance to *S. Anglica*, except in having flesh-coloured petals. It is a native of Spain and Portugal, and was introduced in 1732. There are several other species nearly allied to the last two kinds, natives of Spain, France, and Africa.

S. NOCTURNA, Lin.

A species with rose-coloured flowers, a native of the south of Europe, introduced in 1683.

S. CINEREA, Desf.

A plant remarkable from its silky-greyish hue, with white flowers, and an almost procumbent stem. It is a native of Algiers, and was introduced in 1818.

S. NYCTANTHA, Willd.

The leaves are somewhat fleshy, and the flowers are of a greenish-yellow. The plant was introduced about 1815, but it is not stated of what country it is a native.

S. DISTACHYA, Brot.

The petals of the flowers are pale purple above, but green beneath, and so much cut as to appear each in two spikes. The plant is a native of Portugal, near Coimbra, and was introduced in 1817.

S. COLORATA, Schonsb.

This species, and *S. DISCOLOR, Smith*, very closely resemble *S. distachya*; and all the three kinds are very ornamental.

S. NICÆENSIS, All.

This species is well adapted for rock-work; it is procumbent, and grows in great abundance on the sandy shores of the Mediterranean. The petals are white on the upper surface; but of a pale yellowish-purple beneath. It is a native of the country near Nice, and was introduced in 1820. *S. RAMOSA, G. Don.*, and *S. ARENARIA, Desf.*, are very nearly allied species. They are all very ornamental, and very suitable for rock-work.

S. NOCTIFLORA, Lin.

This plant is a true Catch-fly, being covered with a clammy pubescence. It derives its name from its flowers, which are of a pale blush colour, expanding only at night.

S. CRETICA, Lin.

This species has deep rose-coloured flowers. It is a native of Crete, on rocks by the sea-side; and it was introduced in 1732.

S. RETICULATA, Desf.

This species is remarkable for its calyx, which is marked with ten prominent dark purple stripes, with network between of the same colour. The flowers are small, and rose-coloured. The species is a native of Algiers, and was introduced in 1804.

S. ORCHIDEA, Lin.

The flowers resemble those of some of the kinds of *Orchis*, and both the calyx and the petals are rose-coloured. The plant is a native of the Levant, and the Grecian Isles, and it was introduced in 1781.

There are many other species, but we have selected the most remarkable.

GENUS II.

SAPONARIA, *Lin.* THE SAPONARIA, OR SOAPWORT.*Lin. Syst.* DECANDRIA DIGYNIA.

GENERIC CHARACTER.—Calyx tubular, 5-toothed, naked at the base. Petals 5, unguiculate. Stamens 10. Styles 2.
Capsule 1-celled.—(*G. Don.*)

DESCRIPTION, &c.—This genus approaches very near to that of *Silene*; the principal differences being in the capsule and in the number of the styles. In *Silene* the capsule is 3-celled, and in *Saponaria* it is 1-celled; the petals of *Silene* are usually furnished with a crown of petal-like scales at the throat, but those of *Saponaria* are destitute of these appendages; and the former genus has three styles, while the latter has only two. We have mentioned these points of difference because, to a general observer, the two genera appear very much alike. The leaves of all the plants belonging to *Saponaria* are said to produce a lather like that of soap, when bruised and afterwards agitated in water.

1.—SAPONARIA VACCARIA, *Lin.* THE COW-HERB SOAPWORT.

<p>ENGRAVINGS.—Bot. Mag. t. 2290, and our <i>fig.</i> 7, in Plate 19. SYNONYME.—<i>Lychnis vaccaria</i>, <i>Scop.</i> <i>Gypsophila vaccaria</i>, <i>Smith.</i> VARIETY.—<i>S. v.</i> 2; <i>grandiflora</i>, <i>Fisch.</i> Petals broad, naked, crenate, and emarginate. A native of Iberia.—(<i>G. Don.</i>)</p>	<p>SPECIFIC CHARACTER.—Flowers panicled. Calyxes pyramidal, smooth, 5-angled. Bractees membranaceous, acute. Leaves ovate- lanceolate, sessile.—(<i>G. Don.</i>)</p>
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DESCRIPTION, &c.—A strong-growing plant, with red flowers; a native of corn-fields in France, Germany, Switzerland, and the Levant. It was introduced before 1596, as it is mentioned by Gerard. The name of *Vaccaria*, or Cow-herb, was given to this plant, from its being supposed to increase greatly the milk of cows. The seeds are common in all the seed-shops; they should be sown like those of *Flos Adonis* (see p. 3), and the plants thinned out when about two inches high.

OTHER SPECIES OF SAPONARIA.

S. PERFOLIATA, *Roxb.*

Closely resembling *S. Vaccaria*, of which it is probably a variety. A native of the East Indies, introduced in 1800.

S. DIOICA, *Schlecht. et Cham.*

A native of Buenos Ayres; is probably another variety of the same species.

S. CALABRICA, *Guss.*

This is a very beautiful plant, strongly resembling the perennial species of the genus (*S. ocymoides*), so often found on rock-work. *S. calabrica* is, however, of more erect growth, and has beautiful rose-coloured flowers.

S. PORRIGENS, *Lin.* ♀

The flowers of this species have flesh-coloured petals, and long white stamens. It is a native of the Levant; but it has been in cultivation in British gardens since 1680.

S. ORIENTALIS, *Lin.*

Also a native of the Levant, which has been in cultivation in Britain since 1732; it is a low plant, with very small purplish flowers.

All the kinds require a light dry sandy soil, and to be sown where they are to remain.

GENUS III.

GYPSOPHILA, *Lin.* THE GYPSOPHILA.*Lin. Syst.* DECANDRIA DIGYNIA.

GENERIC CHARACTER.—Calyx campanulate, angular, somewhat 5-lobed, with membranous margins. Petals 5, not unguiculate. Stamens 10. Styles 2. Capsule 1-celled—(*G. Don.*)

DESCRIPTION, &c.—This genus differs from *Silene* and *Saponaria* in the calyx being campanulate, and not tubular, and in the petals being not decidedly unguiculate. The name of the genus expresses lime-loving, and consequently all the plants belonging to it prefer a calcareous or chalky soil. Their flowers are generally small but pretty, and the plants themselves are quite hardy and of easy culture.

1.—GYPSOPHILA VISCOSA, *Murr.* THE CLAMMY GYPSOPHILA.

SPECIFIC CHARACTER.—Flowers fastigately-corymbose; branches divaricating; leaves ovate-lanceolate, smooth, cordate at the base, and clasping the stem; space of stem between the leaves clammy in the middle; petals retuse; segments of the calyx broad, obtuse.—(*G. Don.*)

DESCRIPTION, &c.—This is the commonest kind of *Gypsophila*, and it is very frequently planted on rock-work. The flowers are pink or white. It is a native of the Levant, and was introduced in 1773. The seeds may be purchased in any seed-shop, and they should be sown on the rock-work where they are to remain in April.

2.—GYPSOPHILA ELEGANS, *Bieb.* THE ELEGANT GYPSOPHILA.

SPECIFIC CHARACTER.—Flowers dichotomously-panieled, glabrous; petals emarginate, twice as long as the calyx and stamens; leaves lanceolate, somewhat fleshy.—(*G. Don.*)

DESCRIPTION, &c.—A very pretty little plant with a pink flower, differing from *G. viscosa* chiefly in the leaves being narrower, and acute at both ends. It is a native of Tauria, and was introduced in 1818. The seeds may be procured at Charlwood's, and in other seed-shops; and, like those of all the species of *Gypsophila*, they should be sown in a dry soil—chalky if possible, but if this be not practicable, it should be gravelly or sandy. This species is well grown in Lee's nursery, Hammersmith.

OTHER SPECIES OF GYPSOPHILA.

G. SAXIFRAGA, *Lin.*

This is supposed to be the same as *Dianthus saxifraga*. It has rose-coloured flowers and fibrous roots. It is a native of Europe in stony or rocky places, and it is well adapted for rock-work.



1. *Dianthus strictus* — 2. *Agrostemma californicum* — 3. *Limnanthes Douglasii*

G. TENELLA, *Poir.*

A rock-plant with very slender stems and pink or white flowers ; introduced in 1816, but from what country is not known.

G. ROKEJEKA, *Del.*

Flowers white, striped with purple, and capsules globose. A native of Egypt.

G. COMPRESSA, *Desf.*

Greatly resembling the preceding species. A native of Barbary.

GENUS IV.

DIANTHUS, *Lin.* THE PINK.*Lin. Syst.* DECANDRIA DIGYNIA.

GENERIC CHARACTER.—Calyx tubular, 5-toothed, furnished with 2—6 imbricate, opposite scales at the base. Petals 5, with long claws. Stamens 10. Styles 2. Capsule 1-celled. Seeds compressed.—(*G. Don.*)

DESCRIPTION, &c.—Perhaps no flowers are better known or more generally cultivated than the perennial plants belonging to this genus. The pink, the carnation, and the sweet-william, are in every garden, and are universal favourites. The annual kinds are not so well known ; and, as they are mostly English weeds, they are but seldom cultivated. The most popular annual garden flower of the genus is the Chinese pink, *Dianthus chinensis* ; which, though generally called a biennial in books, will both produce its flowers and ripen its seeds the same year that it is sown.

1.—DIANTHUS CHINENSIS, *Lin.* THE CHINESE PINK.

ENGRAVINGS.—Bot. Mag. t. 28, and our *fig.* 1, in Plate 20.

VARIETY.—D. c. 2 ; flore pleno, *Hort.*, has the flowers semi-double.

SPECIFIC CHARACTER.—Stem branched, flowers solitary, or some-

what aggregate ; calycine scales linear-lanceolate, leafy, cuspidate, spreading, equal in length with the tube ; petals toothed, purple or white, spotted with red ; leaves lanceolate, pale green.—(*G. Don.*)

DESCRIPTION, &c.—The variety of colours produced by these flowers is so great, that in a large bed of seedlings, scarcely two will be found alike. Their shades, however, only vary from a rich dark crimson to pink and white, but the various manners in which these colours are combined and varied almost exceed belief. This astonishing variety renders the Chinese pink very valuable for flower-gardens, though it is entirely destitute of the fragrance of its perennial relations, the carnation and common pink. The Chinese pink is a native of China, from which country it was brought to Paris by some French missionaries in 1705. It was afterwards sent to England, according to the *Hortus Kewensis*, in 1713, and has since been constantly in cultivation. When left to itself it is decidedly an annual, but it may be preserved two or more years by cutting off the seed-pods the moment the flowers begin to decay, and never suffering it to ripen seed. Most annuals, if sheltered from frost during winter, may be preserved in a similar manner. The seeds of the Chinese pink should be sown in a dry warm border in April, or they may be sown in a hot-bed in February and planted out in May. When transplanted, care should be taken not to break the ball of earth round the roots. The plants seldom require thinning,

as they do not spread much, and produce very little effect unless kept in masses. They look best in a warm sunny border, backed by evergreen shrubs; as the foliage of the pinks is scarcely seen, and the somewhat gaudy colours of the flowers require relief. Seeds may be procured at any seed-shop.

OTHER ANNUAL KINDS OF DIANTHUS.

D. PROLIFER, *Lin.* THE COMMON WILD PINK.

This species is found in great abundance in every part of Europe, though it is less plentiful in England than on the Continent. The flowers are produced in heads, and are of a pale pink.

D. ARMERIA, *Lin.* THE DEPTFORD PINK.

The flowers are speckled with pink and white, and only one opens at a time in each tuft. It is found abundantly in England and throughout Europe.

D. CORYMBOSUS, *Sib. et Smith,*

has the flowers rose-coloured above and spotted, but yellowish-green beneath. It is a native of Asia Minor, and has not yet been introduced.

D. ARMEROIDES, *Ruf.*

A native of New Jersey in North America, with red flowers, introduced in 1826.

GENUS V.

AGROSTEMMA, *Lin.* THE AGROSTEMMA, OR ROSE CAMPION.

Lin. Syst. DECANDRIA PENTAGYNIA.

GENERIC CHARACTER.—Calyx 5-toothed, naked. Petals 5, unguiculate, furnished with a crown of petal-like scales in the throat. Stamens 10. Styles 5. Capsule 1-celled.

DESCRIPTION, &c.—The genera *Lychnis*, *Agrostemma*, and *Githago*, are distinguished from each other principally by the shape of the calyx, and the presence or absence of the anthrophorum, or receptacle on which the petals, stamens, and ovary, are seated. The plants belonging to these genera are called by different names by different botanists; and, according to the Linnæan system, some flowers were called *Lychnis*, that are now considered to belong to *Agrostemma*; and the reverse. Under these circumstances, we have not thought it worth while to describe the three genera, but shall include the very few annual species belonging to them under the genus *Agrostemma*.

1.—AGROSTEMMA CELI ROSA, *Lin.* THE ROSE OF HEAVEN, OR SMOOTH-LEAVED LYCHNIS.

SYNONYME.—*Lychnis cæli-rosa*, Des.

ENGRAVINGS.—Bot. Mag. t. 295, and our *fig.* 2, in Plate 20.

VARIETIES.—These are numerous; but they differ chiefly in the leaves being smooth or rough, and the stems decumbent or erect.

SPECIFIC CHARACTER.—Plant glabrous. Stem dichotomously panicled, erect. Flowers solitary, terminal. Calyx clavated, with ten ribs. Lobes very acute. Petals lobed. Leaves linear, acute. Anthophorum long.—(*G. Don.*)

DESCRIPTION, &c.—A very elegant hardy annual, a native of Sicily and the Levant, which was introduced in 1739, and first cultivated by Miller, in the Chelsea Botanic Garden. The seeds, which are common in the seed-shops, should be sown, early in April, where they are to remain, and the plants not thinned out; as, when

allowed room to spread, they become straggling and untidy. The plants look best when sown so as to form tolerably large beds, as the vivid colour of the flowers, combined with their want of adequate foliage, makes them look best in masses. When the seed is sown thinly on rather dry soil, the plants will not grow above six inches high, and will produce a fine mass of red for a geometrical flower-garden, in which each bed is of a different colour.

2.—AGROSTEMMA LÆTA, *Ait.* THE PRETTY ROSE CAMPION.

SYNONYMES.—*Lychnis palustris*, *Brox.*, *L. læta*, *Ait.*

SPECIFIC CHARACTER.—Flowers solitary. Calyxes with 10 ribs. Petals bifid. Leaves linear-lanceolate, rather ciliated.—(*G. Don.*)

DESCRIPTION, &c.—This pretty, joyful-looking little plant, seldom grows above three inches high, and has bright rose-coloured flowers. It is a native of Portugal, and is chiefly found in bogs and moist meadows near Coimbra. It was introduced in 1778; and, when planted in beds, it forms a rich mass of flowers. Seeds may be had at Lee's, Hammersmith; Forrest's, Kensington; Charlwood's; Carter's, Holborn; Kernan's, James Street, Covent Garden; and, we believe, most other seed-shops, under the name of *Lychnis læta*.

3.—AGROSTEMMA GITHAGO, *Lin.* THE CORN COCKLE.

SYNONYME.—*Githago segetum*, *Desf.*, *Lychnis Githago*, *Lam.*

ENGRAVING.—*Eng. Bot.* t. 741.

SPECIFIC CHARACTER.—Plant hairy. Stem dichotomous. Flowers

on long stalks. Leaves linear. Calyx equal in length to the corolla.—(*G. Don.*)

DESCRIPTION, &c.—This, though a troublesome weed to the British farmer, makes an elegant garden-flower. Its colour is purple, with bluish streaks; and it looks best sown in patches. The French Corn Cockle (*A. NICAËNSIS*, *Pers.*), which grows wild near Nice, has white flowers, which are sometimes streaked with red. It was introduced in 1794. Both plants are rather tall-growing, and require training to sticks, or tying up in some way, to make them look neat.

GENUS V.

VALEZIA, *Lin.* THE VALEZIA.

Lin. Syst. DECANDRIA DIGYNIA.

GENERIC CHARACTER.—Calyx tubular, 5-toothed. Petals 5, with long filiform bearded claws, and an emarginate limb. Stamens 10. Styles 2. Capsule 1-celled.—(*G. Don.*)

1.—V. RIGIDA, *Lin.*

A beautiful little plant, with white flowers, having a rose-coloured border: quite hardy, and well-adapted for rock-work. It is a native of France, and was introduced into Scotland in 1683, whence it was soon after brought to England; but it is now probably lost, as we do not know where it is to be procured.

2.—V. QUADRIDENTATA, *Sib. et Smith,*

has rose-coloured petals, and is a native of Asia Minor. Though the flowers of these plants are small, they are so abundant as to produce a very pretty effect. If not intended for rock-work, they should be sown in a dry sandy soil, in a warm open situation, fully exposed to the sun.

CHAPTER XX.

LIMNANTHACEÆ.

ESSENTIAL CHARACTER.—A simple style. Fruit divided into deep lobes. Gynobase never fleshy. Stamens perigynous.—(*Lindl.*)

GENUS I.

LIMNANTHES, *R. Br.* THE LIMNANTHES.

Lin. Syst. DECANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx 5-parted. Petals 5. Stamens 10. Capsules 5.—(*Hook.*)

1.—LIMNANTHES DOUGLASII, *R. Br.* DOUGLAS'S LIMNANTHES.

ENGRAVINGS.—Bot. Reg. t. 1673, Bot. Mag. t. 3554, and our fig. 3, in Plate 20.

SPECIFIC CHARACTER.—Plant glabrous. Stems much branched, terete, decumbent. Leaves alternate on long petioles, pinnate. Leaflets acute, entire, or incised, sometimes pinnatifid. Peduncles

axillary, and about as long as the leaves. Flowers solitary. Calyx deeply cut into 5 spreading segments. Petals 5. Stamens 10, shorter than the petals. Style single, shorter than the stamens. Stigmas of 5 rays each, tipped with a little globose head.

DESCRIPTION, &c.—A very pretty hardy annual, introduced by poor Douglas, in 1832, from California. Its flowers, which are fragrant, are curious from their colour, which is half bright-yellow, and half-pure white. The stems are much branched and decumbent, so that a single plant covers a large space. The leaves are slightly pinnate; and the leaflets are deeply cut. The whole plant is rather succulent, and tastes, when bitten, like the *Nasturtium*, or water-cress. It requires a moist shady situation, having been found near a lake. The name *Limnanthes*, indeed, signifies a lake-flower. This plant is interesting to the botanist, from its having been made, by Dr. Brown, the type of a new order. The order, indeed, only includes this genus and *Floerkea*, another Californian annual, not yet introduced. The seeds of the *Limnanthes*, like those of all the Californian annuals, may be sown at almost any season, when the ground is not hard with frost, and they will generally be in flower about six weeks after sowing. The usual season for sowing it is, however, April, when it will flower early in June. Seeds may be had at any of the seed-shops, and they should be sown thinly where they are to remain.

CHAPTER XXI.

TROPÆOLACEÆ.

ESSENTIAL CHARACTER.—Sepals 5, the upper one with a long distinct spur; aestivation quincuncial. Petals 5, unequal, irregular; the 2 upper sessile and remote, arising from the throat of the calyx, the 3 lower stalked and smaller, sometimes abortive. Stamens 8, perigynous, distinct. Anthers innate, erect, 2-celled. Ovary 1, 3-cornered, made up of 3 carpels. Style 1. Stigmas 3, acute.

Ovules solitary, pendulous. Fruit indehiscent, separable into 3 pieces from a common axis. Seeds large, without albumen, filling the cavity in which they lie. Embryo large. Cotyledons 2, straight, thick, consolidated together into a single body. Radicle lying within projections of the cotyledons.—(*Lindl.*)

GENUS I.

TROPÆOLUM, *Lin.* THE NASTURTIIUM.

Lin. Syst. OCTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx 5-parted, upper lobe furnished with a spur. Petals 5, 3 lower ones smaller or vanished.

Stamens 8, free.—(*G. Don.*)

DESCRIPTION, &c.—The two commonest kinds of these beautiful flowers are so much cultivated, that there is scarcely a child, who has ever seen a garden, who is not acquainted with them. *Tropæolum minus* was the



1. *Tropaeolum majus* — 2. *Tropaeolum majus* var. *atrasanguineum*.
 3. *Tropaeolum minus* — 4. *Tropaeolum minus* fl. pl. — 5. *Tropaeolum peregrinum*

first introduced, and therefore we shall describe it first. Botanically considered, what we call the flower is in fact a coloured calyx, the real petals being small, and alternating with the lobes of the calyx, in the mouth of the spur of which, they are fixed. The name, *Tropæolum*, is derived from a Greek word, signifying a trophy; in allusion to the leaves being like bucklers, and the flowers like helmets.

1.—TROPÆOLUM MINUS, *Lin.* THE LESSER NASTURTIIUM, OR SMALL INDIAN CRESS.

ENGRAVINGS.—Bot. Mag. t. 98, and our *fig.* 3, in Plate 21.

VARIETY.—*T. m. 2 fl. pleno.*—(*G. Don.*) See our *fig.* 4, in Plate 21. This has double flowers, and is a beautiful plant.

SPECIFIC CHARACTER.—Leaves peltate, nerved, orbicular, somewhat repand. Nerves mucronate at the apex. Petals each ending in a bristle-like point.—(*G. Don.*)

DESCRIPTION, &c.—This species, though the first introduced, has now become comparatively rare in our gardens; its modest merits having been eclipsed by its more showy rivals. It has smaller flowers, with much less orange and red in them, than the great *Nasturtium*; the leaves are smaller, of a paler green, and with the nerves ending in small points. The stems also are different, these being much more weak and slender. This plant is a native of Peru, from which country it was sent to Spain early in the 16th century; and Robin, the gardener of Henry IV. in Paris, having obtained seeds of it, sent them to his “loving friend” Gerard, who first grew the plant in England in his garden, in Holborn, before 1596. The plant was described by Dodoneus as *Nasturtium indicum*, from the resemblance of its taste to that of the water-cress, the botanic name of which is *Nasturtium*, and when it was brought to England, it was called Indian-cress; because in those days the Spanish possessions in South America were known by the general name of the Indies. The plant was evidently highly valued at its introduction; for Gerard gives somewhat minute directions for raising it on a hotbed, protecting it with a mat at night, transplanting it, &c. It is now found, however, to be perfectly hardy, and to sow itself freely if permitted to ripen its seed. In the time of Parkinson, it appears to have become quite common, or, as he styles it, “familiar in most gardens of any curiosity.” He gives a very particular description of it, and not only praises its beauty, but its smell! The passage is so curious, that we give it, to show the ideas our ancestors had of fragrance. “The whole flower hath a fine small seent, very pleasing, which being placed in the middle of some carnations, or gilliflowers (for they are in flower at the same time), make a delicate *tussimussie*, as they call it, or nosegay, both for sight and scent.”—(*Paradisus*, p. 281.)

When the plant was first introduced, some botanists thought it might be a Clematis, or a Convolvulus; but, as we have before stated, it was afterwards decided to be a cress, “from its taste and smell.” About the time of Parkinson it was called *yellow Larkes heels*; and it is curious that in some of the works lately published on the language of flowers, those of the Larkspur are said to be yellow, and to signify lightness; the flower meant being evidently not that which we now call the Larkspur, but the *Nasturtium*. The plant is eatable; the flowers, leaves, and young shoots, being sometimes used in salads; and the fruit, when pickled, being very generally employed as a substitute for capers. The culture is very simple, as the seeds seldom fail to germinate if dropped into the ground without the slightest preparation, and the plant looks best when left entirely to itself. When it is thought desirable to train it, it should be planted close to a wooden paling, or low wall, and the shoots suffered to grow, or be thrown, over it. It should never be tied, or nailed; as, from its succulent nature, this could not be done without bruising the shoots, which would instantly wither. The seeds may be purchased in most seed-shops, and they are much harder and rounder than those of the larger kind.

It is a curious fact relating to this plant, that the caterpillars of the cabbage butterflies, though in general they feed only on cruciferous plants, will devour it with the greatest avidity.

2.—TROPÆOLUM MAJUS, *Lin.* THE GREAT NASTURTIIUM.

ENGRAVINGS.—Bot. Mag. t. 23, and our *fig.* 1, in Plate 21.

VARIETIES.—These are numerous; and most of them are very beautiful, though, till lately, but little attention has been paid to raising them. The following are the most important and beautiful:—

T. m. 2 *flore pleno*, G. Don, has double flowers.

T. m. *atrosanguineum*, Swt. Brit. Flow. Gard. t. 204, Bot. Mag. t. 3375, Paxt. Mag. of Bot., vol. i. p. 176, has the whole flower of a dark, rich, reddish orange; it does not grow so luxuriantly as the common kind; but is much more beautiful. This variety may be propagated either by seeds (which, however, do not always come true), or cuttings, taken off at a joint.

T. m. 3 *venustum*, Hort., Paxt. Mag. of Bot., vol. ii, p. 194. A

very beautiful, compact-growing dwarf variety, with the leaves on very long footstalks, and bearing abundance of flowers. This variety was imported, from Ghent, in 1835, by Mr. Knight, of the Exotic Nursery, Chelsea. The flowers are of a bright yellow, with one deep crimson stripe up the centre of each lobe.

T. m. 4 *hybridum*, Syn., *T. hybridum*, Lin. A kind with pale yellow flowers, without any mixture of orange or scarlet, and wedge-shaped leaves; raised in a garden at Stockholm.

SPECIFIC CHARACTER.—Leaves peltate, nerved, orbicular, somewhat 5-lobed. Nerves not mucronate at the apex. Petals obtuse.—(*G. Don.*)

DESCRIPTION, &c.—This species varies very much in the colour of its flowers; and, as before observed, it has many marked varieties. It may, however, always be easily distinguished from *T. minus* by the leaves, which in the latter species, and its varieties, always have the nerves of the leaves ending in a mucro, or point, which is never the case with *T. majus*.

A curious discovery was made respecting this plant by one of the daughters of Linnæus, who died lately at the advanced age of 96. This lady, in the year 1762, “observed the *Tropæolum majus*, or Garden Nasturtium, emit sparks or flashes in the mornings before sunrise, during the months of June or July, and also during the twilight in the evening, but not after total darkness came on.” Similar flashes have been produced by other flowers; and it has been observed, that they are always most brilliant before a thunder-storm.—See *Paxt. Mag. of Bot.*, vol. ii. p. 195.

The properties, habits, and culture of this species, are exactly the same as those of *T. minus*; but when it is wished to grow the flowers to the greatest perfection, the seeds should be sown in a light, rich, warm soil. It may here be observed that, though the species of this genus grow so readily from seeds, they have very small roots, and are easily killed by transplanting. They may all be propagated by cuttings, which, if kept in a greenhouse, will live through the winter, and flower beautifully in spring.

3.—TROPÆOLUM PEREGRINUM, *Jacq.* THE CANARY-BIRD FLOWER.

SYNONYME.—*T. aduncum*, *Smith.*

ENGRAVINGS.—Bot. Mag. t. 1351, And. Bot. Rep. t. 597, Bot. Reg. t. 718, Swt. Brit. Flow. Gard. 2nd ser. t. 134, and our *fig.* 5, in Plate 21.

SPECIFIC CHARACTER.—Leaves palmate. The two upper petals larger, and much cut; the three lower ones fringed. Spur hooked.—(*G. Don.*)

DESCRIPTION, &c.—This very beautiful plant is a hardy annual, like the other species of the genus; though, like them, it may be propagated by cuttings, and kept for several years in a greenhouse. The true perennial species, Professor Don observes, have all tuberous roots. *T. peregrinum* is a native of Peru, from which country it is said to have been imported, in 1775, by Mr. Benjamin Bewick. It is called *Malla* by the Indians, and *Paxaritos Amarillos*, that is, yellow birds, by the Spaniards; and it has been cultivated from time immemorial as an ornamental climber in the gardens of Lima, and other cities of Peru. In England it only requires to be sown, in April, in a rich light soil near a wooden paling, or trellis-work, over which “it may be thrown; and, when thus treated, it will form a splendid ornament to a flower-garden.”

CHAPTER XXII.

LEGUMINOSÆ.

<p>ESSENTIAL CHARACTER.—Calyx 5-lobed, or 5-toothed, or bilabiate. Petals usually 5, rarely fewer, papilionaceous, or unequal, seldom nearly equal, imbricate in æstivation, inserted in the bottom of the calyx, rarely in the torus. Stamens inserted with the petals, and generally twice their number, monadelphous or diadelphous. Ovary</p>	<p>free, usually stipitate. Segments generally 2-valved, 1-celled, or transversely many-celled. Seeds fixed to the upper suture of the legume by funicles. Albumen none. Leaves usually alternate, variable, bistipulate. Flowers of various hues.—(<i>G. Don.</i>)</p>
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DESCRIPTION, &c.—The order *Leguminosæ* is a very interesting one, from the great number of useful plants which it contains. The number of substances useful in medicine or the arts, which are produced from plants belonging to this order, is very great; and among them may be enumerated balsam of Tolu, gum arabic, liquorice, tamarinds, senna, logwood, and indigo. The ornamental trees and shrubs belonging to the order are also very numerous; and among the trees may be mentioned the laburnum, the Judas tree, the Robinia or false acacia, and the true acacias; while among the shrubs are the furze, the broom, the bladder-senna, and many others. Besides these plants, peas, beans, vetches, clover, trefoil, sainfoin, and lucerne, all belong to this important order. All these plants, various as they are, not only in their uses, but in many cases even in the form of their flowers, agree in the important point of bearing their seeds in pods or legumes, which is the circumstance that gives its name to the order; and this is the only point in which all the numerous plants belonging to it agree.

The ornamental annual flowers belonging to *Leguminosæ* are principally comprised in the genera *Lupinus* and *Lathyrus*; but there are garden annuals in almost all the genera in it which contain herbaceous plants, though some of those that were formerly favourites are now considered not worth cultivation, such as the different kinds of medicago. *M. sativa*, the common lucerne, has a pretty purple flower; but the kinds with yellow flowers are generally not worth growing; of these, *Medicago maculata* is still to be found in nurserymen's catalogues, under the name of Snails, the capsules bearing some resemblance to snail-shells; the flower is yellow, but very small and insignificant, and the leaves are small, and of a dingy yellowish green. *Medicago minima* is called hedge-hogs, and *M. denticulata* caterpillars, and both have nothing to recommend them, either in their flowers or leaves. All these kinds of *Medicago* are natives of Britain. *Scorpiurus lœvigata*, and other species of the same genus, are also sometimes called caterpillars, and their capsules do bear a striking resemblance to those creatures; but the plants of the genus *Scorpiurus* are all natives of the Grecian Archipelago, and other parts of the south of Europe, and as their flowers are not remarkable for beauty, they are seldom grown in English gardens. Several kinds of *Melilotus* used formerly to be considered as garden flowers. One species of this genus, *M. officinalis*, is a native of Switzerland, and is well-known, from its flowers and seeds being the chief ingredients used in flavouring the Gruyère cheese. Some of the kinds of *Trifolium* (clover) were also grown in gardens. The crimson trefoil (*Trifolium incarnatum*) is very brilliant in its colour; but its growth is too coarse and untidy to make it suitable for cultivation in a flower-garden. Among the number of flowers belonging to this order, which were formerly cultivated in gardens, may be mentioned the scarlet runner (*Phaseolus multiflorus*), which is now only grown in our kitchen-gardens as a kind of kidney bean. This plant is found in all the lists of ornamental annuals from the time of its introduction in 1633, to the middle of the last century; and it was

thought so beautiful, that (as it is a native of South America) it was thought worth raising on a hotbed before planting out. The genus *Crotalaria* contains many very showy annual plants, some of which are hardy; and the genera *Doryenium*, *Lotus*, *Ononis*, &c., a few each.

GENUS I.

CROTALARIA, *Lin.* THE CROTALARIA.

Lin. Syst. MONADELPHIA DECANDRIA.

GENERIC CHARACTER.—Calyx 5-lobed, subbilabiate. Vexillum | usually many-seeded. Herbs or shrubs with simple or palmately
 cordate, large. Keel foliate, acuminate. Stamens monadelphous. | compound leaves, and usually yellow flowers, rarely purplish.—
 Style bearded laterally. Legume turgid, with ventricose valves, | (*G. Don.*)

DESCRIPTION, &c.—Notwithstanding the extraordinary splendour of the flowers of plants belonging to this genus, it is comparatively little known; and though nearly all the annual species composing it have been introduced, they appear to have been lost; for we have not been able to discover any place where we can procure seeds of them. Under these circumstances, we have not thought it worth while to fill our pages by going into the botanical details of each species; but we have only said a few words on each, so as to give a general idea of the plant. The word *Crotalaria* signifies a castanet, and alludes to the pods of this genus being inflated, and the seeds rattling in them, when ripe.

C. ALATA, *Ham. et. Roxb.*

A plant with pale yellow flowers, and winged stems, growing about a foot high. It is a native of Nepal, and was introduced in 1818.

C. PLATYCARPA, *Link.*

Large yellow flowers, with a rich brownish standard, winged stem, and very broad pods. The plant grows above a foot high. It is a native of North America, and was introduced in 1823.

C. PURSHII, *Dec.*, syn. *C. LÆVIGATA*, *Pursh.*

A native of North America; introduced in 1800. *C. PARVIFLORA*, *Roth.*: introduced in 1817; and *C. SAGITTALIS*, *Lin.*: introduced in 1731, are also natives of North America.

C. ESPADILLA, *H. B. et Kunth.*

A very remarkable species, described by Humboldt. The leaves, when they first expand, are of a golden yellow, but gradually become green with age; and both the leaves and stem are covered with long silky hairs. It is a native of South America, where it is called Espadilla. It has not yet been introduced.

C. VERRUCOSA, *Lin.*; *Bot. Rep.* t. 303; *Bot. Reg.* t. 1137; *Bot. Mag.* t. 3034.

A beautiful species, with purple, blue, green, and white flowers, with anthers of a golden yellow. It is a native of the East Indies, and is generally kept in the stove; but if raised in a hotbed, and then planted out into a warm border, it will flower well. It was introduced in 1731. There is a variety sometimes called *C. acuminata*, with blue flowers.

C. RETUSA, *Lin.*; *Bot. Reg.* t. 253.

A splendid species, with very large golden yellow flowers, the standard of which is sometimes a bright purple. A native of the East Indies, but found also in the Mauritius, and in the West Indian islands.

Introduced in 1731. This plant, from its being supposed to live only in a stove, and its taking so much room, from its growing two feet or three feet high, and branching very much, is now very little cultivated; but if the seeds were raised on a hotbed, and planted out in June, it would be a great ornament to the flower-garden.

C. LESCHENÄULTII, *Dec.*

A native of the Neilgherry mountains, where it is called Guili-guedje by the natives. The flowers are of a pure bright yellow.

C. SPECTABILIS, *Roth.*

The flowers are of a rich dark purple, with golden yellow anthers. Plants of this species, and *C. retusa* mixed, would produce a magnificent effect. *C. spectabilis* is a native of the East Indies, and was introduced in 1820.

C. JUNCEA, *Lin.*

Greatly resembling the common broom. A native of the East Indies, where its fibres are used as a substitute for hemp, and its young shoots as a food for cows. The flowers are small and yellow, but the pod is enormously large, being above a foot long and half a foot broad. The plant frequently grows eight feet high. It was introduced in 1700. There are several other species very nearly allied to this one; all of which have yellow flowers and rush-like stems.

C. TECTA, *Roth.*

The flowers are yellow, striped with blackish-brown. There are several other species, natives of the East and West Indies, two of which are dwarf plants; one, *C. NANA*, *Burm.*, has yellow flowers; and the other *C. PROSTRATA*, *Roth.* Both are natives of the East Indies, and both have been introduced. These plants would be suitable for rock-work in a warm situation, and would produce a fine effect.

GENUS I.

LUPINUS, *L.* THE LUPINE.

Lin. Syst. MONADELPHIA DECANDRIA.

GENERIC CHARACTER.—Calyx bilabiate. Vexillum reflexed on the sides. Keel acuminate. Stamens monadelphous, the sheath entire, bearing 5 small round anthers, and 5 oblong ones, which are later in coming to perfection. Style filiform, crowned by a bearded roundish stigma. Legume coriaceous, compressed, torulose. Erect herbs, with digitate leaves, composed of 5—9 leaflets, rarely simple, and racemose-spikes of blue, white or yellow flowers.—(*G. Don.*)

DESCRIPTION, &c.—The lupine is a very interesting plant to the student in botany, as well as a showy one to the more general observer. It is interesting to the botanist on account of the largeness of its seed, and the distinct manner in which it shows the progress of germination; and also from its affording an excellent example, on a large scale, of the different parts of a papilionaceous flower. If the seed of a lupine be laid in the upper part of a small eroeus glass, and kept covered with water, the process of vegetation may be distinctly traced. The aril, or skin that covers the seed, will first begin to crack and peel off, to admit the swelling cotyledons, into which the seed divides, to burst forth, and take the form of what are called the seed-leaves. From the knot in the centre of the seed, the little plumule rises, with the flower-stalk and true leaves; while the root descends from the same point. The flower consists of five petals, one of which is much longer than the others. This large petal is called the standard or vexillum, and it stands at the back of the others. In front of the standard are two much smaller petals, which are called alæ, or wings; and below them are two petals curiously joined together, which form what is called the earina, or keel. All papilionaceous flowers are formed in this manner, and they

all consist of the same number of parts. The leaves of most of the annual lupines are what is called digitate; that is, the leaflets spread out from a common centre like the fingers of the hand, and are not disposed in pairs as leaflets generally are. The leaf of the lupine affords an example of the sleep of plants, as in the evening, the leaflets close, and hang back upon the footstalk of the leaf. Nearly all the lupines are quite hardy and easily grown, as they require no other care in their culture than simply sowing them. They generally seed freely, and their seeds keep well, and seldom fail to vegetate. The word Lupine is derived from the Latin word *Lupus*, a wolf, because the lupines, when cultivated for food (as they have been in Rome from the most ancient times), require an exceedingly rich soil, and indeed devour, like a wolf, all the food they can get.

1.—LUPINUS ALBUS, *Lin.* THE WHITE LUPINE.

SYNONYME.—*L. sativus*, Gater.

SPECIFIC CHARACTER.—Flowers alternate, pedicellate, destitute of | braeteoles; upper lip of calyx entire, lower one tridentate; leaflets obovate-oblong, usually 7 or 8, villous beneath.—(*G. Don.*)

DESCRIPTION, &c.—The flowers are white, and with scarcely any footstalk to each. There is a variety with the heel of the flower tipped with violet. This plant is a native of the Levant, but it has been long cultivated in Italy and other parts of Europe for food, as peas and beans are with us. In the north of Italy and the south of France, it is sown on poor dry soils, in order that, when the plants come up, they may be ploughed into the land instead of manure, to increase its fertility, and after this treatment the land is said to bear an excellent crop of corn or grass. The practice is described by the ancient Roman writers on agriculture, exactly as it is performed at the present day. The Romans also frequently mention lupines as articles of food; and Pliny says that persons who lived principally upon them always had a fresh colour and a cheerful countenance. Virgil, however, speaks of their extraordinary bitterness; which, was generally abated by soaking them in hot water, and covering them with hot ashes. Among the Greeks, lupines were also used as food, and were thought to brighten the mind, and quicken the imagination. Dioscorides recommends them as a cosmetic, as he says that, when boiled and applied externally, they serve to clear the skin; and Theophrastus says they require a very bad soil, being of an untameable nature, and delighting most to grow wild. This species was introduced by Gerard, before 1596; and it is common in flower-gardens to the present day. Seeds may be procured in any seed-shop.

2.—LUPINUS HIRSUTUS, *Lin.* THE HAIRY LUPINE.

SYNONYME.—*L. digitatus*, *Forsk.*

VARIETY.—*L. 2-albus*, Hort.

SPECIFIC CHARACTER.—Flowers alternate, braeteolate; upper lip of | calyx bipartite, lower one trifid. Leaflets 5, oblong-spatulate, hairy on both surfaces. Legumes very hairy.—(*G. Don.*)

DESCRIPTION, &c.—A very distinct kind; the whole plant being covered with ferruginous hairs. It is remarkable also for its large blue flowers, which have occasioned it to be called in the old books on flowers, the great blue lupine. Nearly allied to it are the Rose Lupine (*L. pilosus*), and the Lesser blue Lupine, (*L. varius*) *L. hirsutus* is a native of the south of Europe, and was introduced between 1596 and 1629, as it is not mentioned by Gerard, who wrote at the former period, though it is by Parkinson, who wrote at the latter. Its seeds are now seldom found in the seed-shops, as its culture has been partly superseded by the many more beautiful kinds that have been introduced since it was a favourite; but there is a beautiful new white variety of it, the seeds of which may be procured at Carter's, Holborn. Like all the other lupines, it requires a light but rich soil to bring it to perfection. It should be sown in March or April, and will flower in June or July.



1. *Lupinus mutabilis*. — 2. *Lupinus mutabilis* var. *Cruikshankii*.
 3. *Lupinus nanus*. — 4. *Lupinus leptophyllus*. — 5. *Lupinus luteus*.

3.—LUPINUS BICOLOR, *Lindl.* THE TWO-COLOURED LUPINE.

ENGRAVING.—Bot. Reg. t. 1109.

SPECIFIC CHARACTER.—Stems branched, corymbose, and, as well as the leaves, clothed with silky pili. Leaflets 5—7, linear-spatulate. Flowers few, verticillate. Calyx clothed with silky wool, inappendi-

culate, having the upper lip bifid, and the lower one elongated and entire. Wings longer than the vexillum. Legumes many-seeded.—(*G. Don.*)

DESCRIPTION, &c.—A very remarkable little lupine, which, from the smallness of its flowers, and their peculiar form, scarcely seems to belong to the genus. The standard is smaller than the other petals, and it is white, just tinged at the apex with red; the wings and keel are of a very deep blue. The plant is dwarf and bushy, and it produces a constant succession of blossoms from May to October. It is a native of North America, where it was found by Douglas in 1836, near the Columbia river, “always on dry gravelly soils, and especially under the shade of trees.” It is quite hardy, and seeds may be had in any seed-shop.

4.—LUPINUS LUTEUS, *Lin.* THE YELLOW LUPINE.

SYNONYME.—*L. odoratus*, *Hort.*

ENGRAVINGS.—Bot. Mag. t. 149; and our *fig.* 5, in Plate 22.

SPECIFIC CHARACTER.—Flowers verticillate, sessile, bracteolate;

upper lip of the calyx bipartite, lower one tridentate. Leaflets 7—9, oblong, lower ones obovate. Bractees ovate, erect.—(*G. Don.*)

DESCRIPTION, &c.—The yellow lupine seldom grows above a foot high; and its flowers, which are of a bright golden yellow, smell like cowslips. It is a native of Spain, whence it was first brought to England about 1590. Gerard and Parkinson, though they place it among those “flat beans, called Lupines,” tell us that, when it was first introduced, it was called the Spanish violet, from the resemblance in colour between it and *Viola lutea*. It is, however, of a much brighter and more golden yellow than *V. lutea*. Seeds of this lupine are abundant in all the seed-shops, and the plants produce a very pretty effect if mixed with the Egyptian-white, rose, and dwarf-blue lupines. The seeds require no other care in sowing, than to keep them separate, and not to cover them too deeply. All kinds of lupine seeds will indeed vegetate, if merely dropped in the soil without any covering; but when planted carefully, the vital knot, from which the root and ascending shoot or plumule are to spring, should be turned downwards. The seeds of the yellow lupine are much smaller than those of the other kinds, so this mark is less perceptible. If the seeds are sown at a sufficient distance apart, the plants will be low and bushy; but if the seeds are sown thickly the plants will be slender and drawn up. It is best to sow them as they are to remain, for pulling up some loosens the roots of the remainder, and they will not bear transplanting.

5.—LUPINUS MUTABILIS, *Sweet.* THE CHANGEABLE LUPINE.

ENGRAVINGS.—Brit. Flow. Gard. 2nd Ser. t. 139; Bot. Reg. t. 1539; Bot. Mag. t. 2682; and our *fig.* 1, in Plate 22.

VARIETY.—*L. m.* 2 *Cruckshanksii*, syn. *L. Cruckshanksii*, Hook. Bot. Mag. t. 3056; Brit. Flow. Gard; and our *fig.* 2, in Plate 22.

SPECIFIC CHARACTER.—Shrubby, erect, branched. Branches spreading, glaucous, glabrous. Leaflets 7—9, glaucous and rather pubescent beneath, lanceolate, bluntish. Flowers somewhat verticillate. Calyx without bracteoles, upper lip bifid, lower one somewhat keeled, acute, entire.—(*G. Don.*)

DESCRIPTION, &c.—Perhaps no flower ever better merited the name of changeable than this, as it, and its variety *L. m.* *Cruckshanksii*, vary in almost every possible shade, between purple, blue, pink, yellow, and white. It is a tall vigorous-growing shrub, from three feet to six feet high, and it produces abundance of its large showy handsome flowers from June to August. It is a native of Peru, and was introduced in 1819. It may seem strange to class a shrubby plant among annuals; but the fact is, as Dr. Lindley very justly observes in the Bot. Reg. (new Series, vol. v.) that “it rises with a rigid woody stem to the height of about three feet, and has

all the appearance of an arborescent species; but as the frost always destroys it, and it flowers and fruits the first year of being raised from seeds, it is for our gardens a mere annual." It is thus considered and treated both by gardeners and seedsmen, and accordingly we have included it in our list. The species was first raised in England in the garden of the late Charles Barclay, Esq. Bury Hill, near Dorking, "from seeds obtained from Santa Fé de Bogota." *L. m. Cruckshanksii* was found by Alexander Cruckshanks, Esq., "growing upon the Andes of Peru, in great plenty, not far from Pasco, and near the verge of perpetual snow." (*Bot. Mag.* vol. 58.) This magnificent Lupine was introduced in 1829. The seeds of both kinds may be sown in the open ground in April; but they will be much finer if raised three together in a pot plunged in a hotbed in March, and then planted out the first week in May, carefully turning the ball of earth out of the pot without breaking it, and planting it in a hole, previously dug for its reception.

6.—LUPINUS LEPTOPHYLLUS, *Benth.* THE SLENDER-LEAVED LUPINE.

ENGRAVINGS.—*Bot. Reg.* t. 1670; and our *fig.* 4, in Plate 22.

SPECIFIC CHARACTER.—Annual. Stem erect, almost simple, spreading, hairy; leaflets linear, narrow, hairy or silky on both sides. Flowers

near together or apart; bractæ below the flower-stalk tufted and somewhat rough; pedicels bracteolated; upper lip of the calyx bipartite; lower lip longer, and tridentate.—(*Benth.*)

DESCRIPTION, &c.—This elegant lupine is remarkable for the singular colour of its flowers, and its very slender leaves. It grows about a foot high, and the whole plant is covered with soft hairs. The flowers, which, disposed in a very irregular manner on the spike, are of a bluish lilac, with a deep rich crimson spot in the middle of the standard, and the long linear bracts of the unexpanded blossoms form a kind of crown on the summit of the whole. The seeds "are unusually small for a lupine, and of a pale brown, mottled with a darker shade." Seeds may be procured in the seed-shops, though they are not produced in much abundance, and they should be sown in a shady place, as this lupine does not flower well if exposed to too much light. It is a native of California, and was introduced in 1834.

7.—LUPINUS NANUS, *Benth.* THE DWARF LUPINE.

ENGRAVINGS.—*Bot. Reg.* t. 1705, and our *fig.* 3, Plate 22.

SPECIFIC CHARACTER.—A low annual hairy plant, with a decumbent stem, slightly branched, leaves 5—7, spatulate; flowers verticillate,

calyx silky-woolly, villose, appendages obsolete; upper lip bipartite, lower one longer, and obscurely tridentate.—(*Lind.*)

DESCRIPTION, &c.—A very pretty dwarf plant, with blue or purple flowers intermingled with a tint of rose-colour and white. It may be sown at any season in masses, and it will come into blossom in two or three weeks after sowing. It is particularly suitable for sowing to form masses in a geometrical flower-garden, from its low and compact habit of growth, and from the great abundance and long duration of its blossoms. It is a native of California, and was sent home by Douglas in 1834. It is rather capricious in producing seed, some nurserymen finding it frequently to fail. There is, however, abundance of seed at Forrest's nursery, Kensington; and we have never seen the plant grown in greater perfection than in Mr. Forrest's beds and borders.

8.—LUPINUS ELEGANS, *Humb. et Kunth.* THE ELEGANT LUPINE.

ENGRAVING.—*Bot. Reg.* t. 1381.

SPECIFIC CHARACTER.—Erect; softly pilose; racemes with elongated peduncles, flowers subverticillate; calyx silky-pilose, lower lip acute,

entire; leaflets lanceolate, acute, covered below with adpressed hairs, stipules bristly.—(*Dec.*)

DESCRIPTION, &c.—This species is remarkable for its drooping leaves, or rather leaflets, which appear to have obtained for it the name of elegant, as it seems to have no other claim to the title. These leaves, however, do

not convey any pleasant idea to the mind of a casual observer, as they look as though the plant were suffering from want of water. The flowers also are of rather a dingy reddish-purple, and have nothing particular to recommend them. The plant is a "native of Mexico, whence seeds were sent to the Horticultural Society by Dr. Deppe in 1831." The seeds, which the plants ripen freely, may be procured at any seed-shop; and if they are sown in the open air in April, the plant will flower in June.

9.—LUPINUS DENSIFLORUS, *Benth.* THE DENSE-FLOWERED LUPINE.

ENGRAVING.—Bot. Reg. t. 1689.

SPECIFIC CHARACTER.—Pilose, stems ascending from a leafy base; leaflets 7—9 oblong-spathulate. Flowers disposed in whorls consisting of from 6 to 10 each, placed very closely together, hairy; pedicels

bracteate; upper lip of the calyx membranaceous and bipartite, lower lip twice as long, tridentate, pilose. Legumes covered with scattered hairs.—(*Lind.*)

DESCRIPTION, &c.—A very beautiful and remarkable little plant. The stem does not grow above six or seven inches high, and the flower-stalk rises from a rich tuft of leaves, each of which consists of nine leaflets covered with fine soft hairs. The flowers are white, delicately tinted with pink, and at the base of the standard of each is a little yellow stain, on which are a few black spots. The flowers grow in distinct whorls, but are placed very closely together in each whorl. It is a native of California, and was sent home by Douglas in 1834, but as it produces very few seeds, it is still rare. Seeds may, however, be procured of the principal seedsmen, and, like those of all the Californian annuals, they may be sown at any season when the ground is not hard with frost, with the certainty of their flowering, if the weather should be open, in a few weeks.

OTHER SPECIES OF LUPINE.

Of the following kinds there is so little to be said, that we have not thought it worth while to give all their botanical details. We shall, however, speak of them more fully than we generally do in similar cases, as we believe seeds of most of them are to be procured in all the London seed-shops, and as they are common in our flower-gardens.

L. TENUIS, *Forsk.*, syn. L. PROLIFER, *Des.* THE EGYPTIAN LUPINE.

A very handsome plant, growing from one to two feet high, with large white flowers, having the standard beautifully tipped with blue. This species only differs botanically from *L. albus* in having bracteoles and only five or six leaflets, whereas *L. albus* has no bracteoles and seven or eight leaflets. It is a native of Egypt, and was introduced in 1802, but we do not know where seeds are now to be procured. The flower-stalks of this plant when peeled, are eaten raw by the Arabians, and the seeds are boiled as a substitute for peas or beans.

L. VARIUS, *L.*; syn. L. SEMI-VERTICILLATUS, *Des.*; L. SYLVESTRIS, var. *Lam.* THE LESSER BLUE LUPINE.

This is a tall strong-growing plant, generally three feet high, with small blue flowers. It only differs botanically from *L. tenuis* in having the upper lip of the calyx bidentate instead of entire, and the leaflets somewhat lanceolate instead of oblong. It is a native of the south of Europe and Egypt, and was introduced before 1596. It is very nearly allied to *L. hirsutus*.

L. PILOSUS, *Lin.* THE ROSE LUPINE.

This also is very nearly allied to *L. hirsutus*, and indeed Miller considered it only a variety of that species. Subsequent botanists have made it a distinct species on account of the lower lip of its calyx being entire, whereas

in *L. hirsutus* it is tridentate, and from its having from nine to eleven leaflets instead of five. The flowers of this species are of a beautiful rose colour, having the centre of the standard dark red. It is a native of the south of Europe, and was introduced in 1710. There is said to be a variety with bluish-purple flowers. Seeds of the rose lupine may be had in any seed-shop, and if sown in April the plants will flower in July and August.

L. BRACTEOLARIS, *Des.*

A native of Monte Video, introduced in 1820. It is said to be allied to *L. hirsutus*, though it does not grow above a foot high, but very little appears to be known about it.

L. ANGUSTIFOLIUS, *Lin.* THE DUTCH BLUE LUPINE.

A native of the south of Europe, nearly allied to *L. varius*, with blue flowers and variegated seed. It was introduced in 1696, and the seeds are frequently to be found in seed-shops.

L. MICROCARPUS, *Sims.*, Bot. Mag. t. 2413.

This species is a native of Chili, and was introduced in 1820. It has blue flowers, with a purplish tinge at the apex, and very small pods, there being only two seeds in each. It is a dwarf species, and flowers in May and June.

L. PUSILLUS, *Pursh.*

This species also does not exceed six inches in height. It has small blue flowers tinged with red. It is a native of North America near the Missouri, and was introduced in 1817.

L. MICRANTHUS, *Doug.*

A curious little plant nearly allied to *L. bicolor*, and resembling that species in the smallness of its flowers, though they differ from those of *L. bicolor* in their form and colour. The flowers are pale purple, and the centre of the standard is white with four black dots. The leaves are fleshy, and the whole plant is covered with long fine hairs. This species was found by Douglas on the gravelly banks of the Columbia, and was introduced in 1827. Seeds may be had in the seed-shops.

GENUS III.

LOTUS, *Lin.* THE LOTUS, OR BIRD'S TREFOIL.

Lin. Syst. DIADELPHIA DECANDRIA.

GENERIC CHARACTER.—Calyx tubular, 5-cleft-wings and vexillum nearly equal. Keel beaked. Legume cylindrical. Stigma subulate. Herbs, usually with yellow flowers.—(*G. Don.*)

DESCRIPTION, &c.—The size and shape of the flowers of plants of this genus, will be familiar to every one who has seen the common *Lotus corniculatus*, or Bird's-foot Trefoil of the fields. There are many annual species, most of which have yellow flowers, and differ so very little from each other, that we shall not think it necessary to describe above two or three species. The Linnean genus, Lotus, has been divided by modern botanists into two genera differing in the form of the pod, which in Lotus is always without wings; while in *Tetragonolobus* it is angular, and furnished with four wings. The plant we have called by its Linnean name of *Lotus tetragonolobus*, is the type of the latter genus.

1.—*LOTUS EDULIS*, *Lin.* THE EATABLE LOTUS.

SPECIFIC CHARACTER.—Plant pilose. Stems erect. Leaflets ovate, ciliated. Flowers 1—3. Bracteas ovate, about equal in length to the calyx. Legume turgid, arched, glabrous. Seeds globose, compressed, wrinkled from dots.—(*G. Don.*)

DESCRIPTION, &c.—This plant is a native of the South of Europe, particularly of the islands of the Mediterranean, where the pods are eaten when young by the poorer people as kidney-beans are with us. It is a trailing plant with yellow flowers, suitable for rock-work. It was introduced in 1759, but we do not know where seeds are now to be procured.

2.—*LOTUS JACOBÆUS*, *Lin.* BLACK, OR ST. JAGO BIRDS'-FOOT TREFOIL.

ENGRAVINGS.—Bot. Mag. t. 79; and our *fig.* 10, in Plate 23.

SPECIFIC CHARACTER.—Plant rather glaucous. Stems shrubby. Leaflets and stipules linear, or linear-spatulate, rather pilose and canescent, mucronate. Bracteas of 1 or 3 linear leaflets. Peduncles larger than the leaves. Flowers corymbose on very short pedicels. Legume terete, glabrous.—(*G. Don.*)

DESCRIPTION, &c.—This is another greenhouse shrub, which succeeds perfectly well when treated as an annual. The flowers are small, and of no great beauty, but the plant is worth growing on account of their colour, which is very nearly black, perhaps more nearly than any other flower. There is a variety with the flowers partly yellow. The species is a native of the Cape de Verd Islands, particularly of St. Jago; and it was introduced in 1714. Seeds may be procured from Mr. Carter, High Holborn, or at Lee's Nursery, Hammersmith; and the plants may be sown in February or March in a hotbed, and planted out in May; or sown in the open ground in a warm dry border in April.

3.—*LOTUS MICROPHYLLUS*, *Hook.* THE SMALL-LEAVED LOTUS.

ENGRAVING.—Bot. Mag. t. 2808.

SPECIFIC CHARACTER.—Slightly hairy. Stem filiform and procumbent. Leaves elliptic, hairy beneath. Stipules subulate. Flowers few in each head. Legumes short, cylindrical, hairy, 3-celled. Seeds dotted.—(*Hook.*)

DESCRIPTION, &c.—A curious little plant, with slender stems, and very small pink flowers, disposed in heads, so small as each to appear at a little distance to be composed of only one flower. The species is a native of the Cape of Good Hope, where it was found by the collector to the king of Denmark; and it was sent by Professor Hornemann, of Copenhagen, to Sir W. J. Hooker, at Glasgow, in 1827. The species would be very suitable for rock-work, from its slender, procumbent stems, and bright pink flowers; but we have never seen it in the London nurseries, and do not know where seeds are to be procured.

4.—*LOTUS ARENARIUS*, *Brot.* THE SAND LOTUS.

ENGRAVING.—Bot. Reg. 1488.

SPECIFIC CHARACTER.—Stems procumbent, branching, pubescent; peduncles branched, erect. Leaflets acute, wedge-shaped; stipules ovate. Flowers 5—10 in each head. Bracteas sub lanceolate, less than the calyx. Calyx subulate, teeth two, the upper one the longest. Legumes round, and smooth.—(*Dec.*)

DESCRIPTION, &c.—A very showy species of *Lotus*, with large golden-yellow flowers, and a prostrate stem. It was found originally in Portugal, on sandy sea-coast near the mouth of the river Tagus, by Professor Brotero, and since by Professor Salzmann on the sandy coast near Tangiers; but it was not introduced into England, till seeds were sent here by P. B. Webb, Esq., from Teneriffe in 1830. Seeds are not common in the London seed-shops, but they may be had from Mr. Young of the Milford Nursery, near Godalming, Surrey.

5. LOTUS TETRAGONOLOBUS, *Lin.* THE DARK CRIMSON-WINGED PEA.SYNONYME.—*Tetragonolobus purpureus*, *Mench.*ENGRAVINGS.—*Bot. Mag.* t. 151; and our *fig.* 9, in Plate 23.

SPECIFIC CHARACTER.—Plant pilose. Stems rather decumbent.

Leaflets obovate, entire. Stipules ovate. Flowers solitary or twin.

Bracteas longer than the calyx. Legume glabrous, with broad wings.

Seeds globose.—(*G. Don.*)

DESCRIPTION, &c.—This very curious plant has dark crimson flowers, and large flat pods, which are so deeply winged, that they appear surrounded by a flounce. It is a native of Sicily, and was brought to England in 1769. It is quite hardy, and was long a great favourite in flower-gardens; but it is now seldom grown. It is, however, well deserving of cultivation from the rich colour of its flowers, and its curious seed-pods. The only place where we ever saw it growing, was the Lewisham nursery, in the summer of 1838; and we suppose seeds may be procured there, though they are not included in the general lists of the London nurserymen. The seeds should be sown in April, and the plants will come into flower in June.

6.—LOTUS BIFLORUS, *Des.* THE YELLOW TWIN-FLOWERED WINGED PEA.SYNONYMS.—*L. conjugatus*, *Poir*; *Tetragonolobus biflorus*, *Seringe*.

SPECIFIC CHARACTER.—Plant pilose, rather decumbent. Leaflets obovate, somewhat mucronulate, entire. Stipules orbicularly oblong,

acuminated. Flowers twin or ternate. Bracteas ovate, shorter than the calyx. Legumes pilose with narrow wings. Seeds almost globose.—

(*G. Don.*)

DESCRIPTION, &c.—A decumbent plant, with bright yellow flowers; a native of Barbary, and also of the fields near Palermo. Introduced in 1818; and very suitable for planting on rock-work with the preceding and following species. We do not know where seeds are to be purchased, but the seedsmen might easily procure them from Sicily.

7.—LOTUS CONJUGATUS, *Lin.* THE PURPLE TWIN-FLOWERED WINGED PEA.SYNONYME.—*Tetragonolobus conjugatus*, *Seringe*.

SPECIFIC CHARACTER.—Plant pilose. Stems rather decumbent, leaflets obovate, entire. Stipules ovate, small, acuminate. Flowers

in pairs. Bracteas obovate, longer than the calyx. Legume glabrous,

nearly round, with very narrow wings, which are hardly curled. Seeds

ovate, compressed, black.—(*G. Don.*)

DESCRIPTION, &c.—This species bears a very close resemblance to the preceding kind, except in the colour of the flowers, and in the legume being smooth instead of hairy. It is a native of the country near Montpellier, and was introduced in 1759. We do not know where seeds are to be purchased in London, but we suppose they might easily be procured from Paris, through M. Vilmorin, or any other French nurseryman.

OTHER SPECIES OF LOTUS.

These are very numerous; but not sufficiently distinct to be recognised by any descriptions we could give of them, except by botanists. One of them, *L. Ornithopodioides*, has nearly round legumes disposed so as to resemble a bird's foot, and as this was one of the first species described by botanists, the English name for the genus, Bird's-trefoil, was taken from it. Most of the kinds have golden-yellow flowers, but there are some exceptions, and among others the following.

L. GEBELIA, *Vent.*

This plant is a native of Mount Gebel-cher, near Aleppo; and was introduced in 1816. It is decumbent, with large rose-coloured flowers; and though marked as a perennial in books, might very probably be grown as an annual; and it would produce a fine effect on rock-work.

L. LANUGINOSUS, *Vent.*

Has rose-coloured flowers, and a prostrate stem.

L. GLABERRIMUS, *Dec.*; L. TRICHOCARPUS, *Lag.*; and L. COIMBRICENSIS, *Brot.*

Have white flowers, with the keel more or less purple, and prostrate stems.

L. ODORATUS, *Sims.*; *Bot. Mag.* t. 1233.

The flowers are yellow, striped with red, and the plant is sweet-scented. It is a native of Barbary, introduced in 1804.

GENUS IV.

ASTRAGALUS, *Lin.* THE MILK-VETCH.

Lin. Syst. DIADELPHIA DECANDRIA.

GENERIC CHARACTER.—Calyx 5-toothed. Keel obtuse.—(*G. Don.*)

1.—ASTRAGALUS SINICUS, *Lin.* THE ROSE-COLOURED MILK-VETCH.

SYNONYME.—*A. Lotoides*, *Lam.*

ENGRAVINGS.—*Bot. Mag.* t. 1350; and our *fig.* 11, in Plate 23.

SPECIFIC CHARACTER.—Plant prostrate, glabrous. Stipules not known. Leaves with about four or five pairs of obovate, nearly obovate

date leaflets. Flowers four or five in an umbel. Peduncles length of leaves. Legumes prismatic, triquetrous, erect, subulate at the apex.—(*G. Don.*)

DESCRIPTION, &c.—A very pretty little plant with rose-coloured flowers, well adapted for rock-work. It resembles a *Coronilla* more than any plant of the genus to which it is considered to belong, as its flowers are produced in an umbel. It is a native of China, and was introduced in 1763. Seeds may be had at Carter's, Holborn, of three annual kinds of *Astragalus*, but the specific names are not given in his seed catalogue. It is, however, probable the above species is one of the three, as it is the kind most generally cultivated.

OTHER KINDS OF ASTRAGALUS.

A. VERRUCOSUS, *Moris.*

This species is a decumbent plant, with dark purple flowers and warted pods. A native of Sardinia, not introduced.

A. PENTAGLOTTIS, *Lin.* A. PROCUMBENS, *Mill.* syn.

A native of Spain and Barbary, on hills, with bright blue and white flowers, and the pods round, and finger or tongue-shaped, in bunches of five together.

A. CRUCIATUS, *Link.*, syn. A. STELLA, *Bieb.*

Flowers violet-coloured, and the pods disposed in the shape of a cross or star; a procumbent plant found wild both in Egypt and Siberia, and introduced in 1820. There is another plant, called *A. stella*, *Gouan*, which is a native of the south of France and north of Africa, and has bluish-purple flowers. This last kind was introduced in 1658.

A. ANNULARIS, *Forsk.*

A spreading procumbent plant, with whitish green leaves, and rose-coloured flowers. A native of Egypt. Introduced in 1800.

A. CANICULATUS, *Willd.*

A native of the south of Europe, with white flowers. Introduced in 1816.

A. RETICULATUS, *Bieb.*

A very small plant, with curious hooked, netted legumes, and bright blue flowers. A native of Middle Iberia. Introduced in 1828.

A. HAMOSUS, *Lin.*

Flowers pale yellow, and plant prostrate. Seeds of this species are frequently sold under the name of caterpillars in the seed-shops, in allusion to the curious shape of the pods. This species is a native of the South of Europe, and was introduced about 1640.

There are many other species with pale-yellow flowers, all of which have been introduced; and the seeds of one of which are used in Hungary, after having been roasted and ground, as a substitute for coffee.

GENUS V.

CORONILLA, *Lin.* THE CORONILLA, OR SCORPION-SENNA.*Lin. Syst.* DIADELPHIA DECANDRIA.

GENERIC CHARACTER.—Calyx 5-toothed, two upper teeth approximate. Petals unguiculate. Keel acute.

DESCRIPTION, &c.—The shrubs belonging to this order are well known, but the annual plants are very seldom seen in cultivation. The name of coronilla is from corona, a crown, in allusion to the disposition of the flowers in heads or umbels.

1.—CORONILLA CRETICA, *Lin.* THE CRETAN CORONILLA.

SYNONYMES.—*C. parviflora*, *Manch.*; *Astrolobium Creticum*, *Des.* | acute; leaflets 11—13, cuneated, retuse, the lower ones remote from
SPECIFIC CHARACTER.—Plant ascending, glabrous; stipules small, | the stem; umbels 3—6 flowered.—(*G. Don.*)

DESCRIPTION, &c.—A very pretty plant, with white flowers, the standard being streaked with red, and the keel dark purple. A native of Candia, Tauria, and Italy, on hills, introduced in 1731. This plant was formerly very common in flower-gardens, but it appears to have gradually gone out of cultivation, and we do not know where seeds are now to be procured.

2.—CORONILLA SECURIDACA, *Lin.* THE HATCHET-VETCH.

SYNONYMES.—*Securigera coronilla*, *Dec.*; *Securidaca lutea*, *Mill.*; | with rather prominent sutures, the seeds separated by spongy substance,
S. legitima, *Gertn.* | not articulated, linear, ending in a long beak at the apex. Seeds

SPECIFIC CHARACTER.—Plant prostrate. Legume compressed, flat, | 8—10, compressed. Flowers yellow, 3 or 4 in an umbel.

Though the name of this plant is found in every seedsman's catalogue, it is scarcely worth growing, from its coarse and spreading habit of growth. It is a prostrate plant, with coarse strong stems from a foot to two feet long, and divided into many branches. The leaves are pinnate, and are composed of seven or eight pairs of

rather large deep green leaflets. The flowers are of a bright yellow, and are produced in a large cluster at the extremity of each peduncle. The pods are nearly four inches long, and are somewhat sword-shaped and furrowed. This plant is a native of Spain, and as it is mentioned by Gerard, it must have been introduced before 1596. Linnæus observes of this plant, that it sleeps with the leaflets bent back towards the base of the petiole, and not pointing forwards. The seeds should be sown where the plants are to remain, as they do not bear transplanting; and when the plants come up, they should be thinned out so as to leave them at least a foot and a half or two feet apart, to allow room for the widely-spreading branches.

GENUS VI.

VICIA, *Lin.* THE VETCH.

Lin. Syst. DIADELPHIA DECANDRIA.

GENERIC CHARACTER.—Calyx tubular, 5-cleft, or 5-toothed, 2 superior teeth shortest. Style villous at the apex. Legume many-seeded. Usually climbing herbs, with the leaves generally ending in a branched tendril. Flowers white, purple, or yellow.—(*G. Don.*)

1.—VICIA ATROPURPUREA, *Desf.* THE DARK PURPLE VETCH.

SYNONYME? *V. Nissoliana*, *Lin.*

ENGRAVINGS.—Bot. Reg. t. 371; and our *fig. 8*, in Plate 23.

SPECIFIC CHARACTER.—Plant villous. Stems tetragonal. Tendrils very trifid. Leaflets oblong, mucronate, numerous, opposite, and alternate. Stipules lanceolate, semi-sagittate, usually toothed at the

base. Peduncles many-flowered, hardly the length of the leaves. Flowers secund, approximate. Calycine teeth setaceous, pilose, longer than the tube. Style elongated, somewhat clavate, bearded at the apex. Legumes oblong, compressed, very hairy. Seeds globose, black, rather velvety.—(*G. Don.*)

DESCRIPTION, &c.—A very showy species, with dark purple flowers, a native of Algiers, where it was found by Desfontaines. It was introduced in 1815, from seeds sent from the Botanic Garden, Gottingen, by the late M. Fischer, to the London Hort. Soc.; but we do not know where seeds are now to be procured.

2.—VICIA ONOBRYCHIOIDES, *Lin.* THE SAINTFOIN-LIKE VETCH.

ENGRAVINGS.—Bot. Mag. t. 2206; and our *fig. 7*, in Plate 23.

SPECIFIC CHARACTER.—Stems striated. Tendrils almost simple. Leaflets numerous, linear, alternate or opposite, obtuse, and mucronate, with parallel nerves. Stipules linear, semi-sagittate, dentate. Pedun-

cles very long, many-flowered. Flowers distant. Calycine teeth lanceolate, length of the tube. Style clavate, bearded at the apex. Legumes lanceolate.—(*G. Don.*)

DESCRIPTION, &c.—A handsome species, bearing some resemblance to the common tufted vetch of the hedges, *Vicia Cracca*. It has commonly fourteen leaflets; the peduncles are three times as long as the leaves, and the flowers, of which there are ten or twelve on each peduncle, are three times as large as those of *V. Cracca*, and all disposed one way. The pod is compressed, lanceolate, and narrowed at both ends. It is a native of France and Switzerland, and it has also been found on Mount Atlas. It was introduced in 1759. The seeds are said to do best when sown in autumn; and when sown in spring they should be lightly covered, and well watered; they are, however, frequently several months before they vegetate. They should always be sown when the plants are destined to remain, as they do not bear transplanting well. They do best in a shrubbery, where their roots are sheltered from the sun, and where they have a support to climb up. Only three or four seeds should be sown in each patch; and where the plants have no natural supports near them, they should be carefully trained to

stakes, as, if suffered to trail on the ground, they will produce very few flowers, and in wet seasons the stalks will rot. They look exceedingly well if suffered to climb through the boughs of a thick bush, or low tree, so that their flowers may be relieved by a mass of leaves. The name of this Vetch is not in the seedsmen's catalogues, but seeds might easily be obtained through M. Vilmorin, from Paris.

OTHER SPECIES OF VICIA.

These are very numerous; but it does not appear to us that any of them require very particular description. The flowers and leaves all bear a great resemblance to each other, and the principal differences consist in the colours of the flowers, which vary from white, blue, and pinkish, to dark purple.

GENUS VII.

LATHYRUS, *Lin.* THE LATHYRUS, OR ORNAMENTAL PEA.

Lin. Syst. DIADELPHIA DECANDRIA.

GENERIC CHARACTER.—Calyx campanulate, 5-cleft, 2 superior lobes shortest. Style flattened, dilated at the apex, villous or pubescent in front. Legume many-seeded. Usually climbing tendrilled herbs, with purple, white, or yellow flowers.—(*G. Don.*)

DESCRIPTION, &c.—The sweet pea and the other ornamental kinds of *Lathyrus* are so well known, and such universal favourites, that it is sufficient to mention their names, to call up clear ideas of them to every mind. If well trained, they are very ornamental; but few plants have a more disorderly and untidy effect if they are neglected. They are thus well suited for the culture of a lady, as they require continual watering, tying up, and cutting off of dead flowers or bruised branches.

1.—LATHYRUS ODORATUS, *Lin.* THE SWEET PEA.

ENGRAVINGS.—Bot. Mag. t. 60; and our *fig.* 1, in Plate 23.

VARIETIES.—There are six distinct kinds of sweet pea in constant cultivation, all of which, with very few exceptions, come true from seed. These are *the purple*, which has the standard of a deep rich reddish purple, the wings pinkish, and the keel nearly white, and is a native of Sicily; *the new Painted Lady*, which has the standard deep rose-colour, the wings pale rose, and the keel pure white, and is a native of Ceylon; *the white sweet pea*, which has the flowers a pure white; *the Old Painted Lady*, which has the wings and keel white, and the

standard flesh-coloured; *the blue*, which has the wings and keel a pale blue, and the standard dark bluish purple; and *the violet*, which has the keel a pale violet, the wings a deep violet, and the standard a dark reddish purple.

SPECIFIC CHARACTER.—Plant hairy. Stems winged. Leaflets ovate, mucronulate. Stipules semi-sagittate, lanceolate, much shorter than the petioles. Peduncles 2-3-flowered, much longer than the leaves. Calycine teeth broad, longer than the tube. Legumes oblong-linear, compressed, hairy. Seeds roundish.—(*G. Don.*)

DESCRIPTION, &c.—The sweet pea is the plant that is said to have given to Linnæus the idea of calling all similarly shaped flowers, papilionaceous, from the great resemblance of its flower to a butterfly on the wing. However this may be, it is certain that this flower shows distinctly the wonderful manner in which every part of it has been contrived to fulfil the end in view. The formation of the pod requires that the whole of the pollen should be preserved, as unless there be a sufficient quantity to pass through the stigma down the tube to which the peas are affixed, so as to fertilise each, the seed would be imperfect. To preserve the pollen uninjured and undiminished, the anthers are enclosed in the keel; and the necessary openings for air in this are protected by the wings; while the standard acts as a sail to keep the flower with its back to the wind, and thus a whole



1. *Lathyrus odoratus*.— 2. *Lathyrus Tergitanus*.— 3. *Lathyrus sativus*.— 4. *Lathyrus articulatus*.
 5. *Lathyrus Nissolia*.— 6. *Lathyrus amphicarpos*.— 7. *Vicia Onobrychiodes*.— 8. *Vicia atropurpurea*.
 9. *Lotus Tetragonolobus*.— 10. *Lotus Jacobaeus*.— 11. *Astragalus sinicus*.— 12. *Lathyrus vulgaris*.

row of sweet peas may be seen occasionally with their blossoms turning and quivering in the breeze, till they look really like a flock of butterflies seeking for spots to deposit their eggs. It is rather singular that these flowers, though the commonest kind is a native of Sicily, should never have been introduced till the beginning of the past century; the first sweet pea that was seen in England having blossomed in Dr. Uvedale's garden at Enfield, in the year 1701, as we are told by Dr. Plukenet, who went to see it there. A few years afterwards (1713) we find it included in the list of ornamental flowers in the Botanic Garden, Chelsea. We may easily conceive the delight and wonder the first appearance of this flower, and its extraordinary sweetness, must have occasioned, and how proud Dr. Uvedale must have been of possessing it.

Sweet peas in the grounds of a nursery are generally planted in rows; but in flower gardens they are either sown in a circle, with a stake, or slight wooden frame in the middle, for them to be trained to; or suffered, as Cowper so elegantly expresses it, to

“————— catch a neighbouring shrub,
With clasping tendrils, and invest its branch,
Else unadorn'd, with many a gay festoon
And fragrant chaplet, recompensing well
The strength they borrow with the grace they lend.”

The seeds may be sown at different seasons; if sown in autumn, and protected by a mat or other slight covering thrown over the ground in severe frost, they will flower early; or they may be sown in the same manner in February, in which case they are said to produce the finest flowers. The usual time of sowing is, however, April. The soil should be rich and light, as the roots, though weak and slender, penetrate deeply; and for the same reason the seeds should always be sown where the plants are to remain, as it is hardly possible to take up the long slender roots without injuring them. Thinning out should also be avoided, as pulling up one plant, loosens the earth round the roots of the others; thus each patch or pot should contain only three or four seeds.

The florists who raise flowers for sale in the London markets, derive a considerable portion of their trade from forcing sweet peas, and the quantity thus grown in pots every year is almost incredible. The seeds for this purpose are sown in pots in autumn, and then kept in hotbed frames, but without any manure; all that is necessary being to protect them from the frost. They require to be frequently watered with warm water, and to be covered up very closely after each watering, to prevent the possibility of the ground freezing while in a moist state. They may thus be kept with very little light or air; but when the blossom-buds begin to form, the pots must be placed in the window of a living room, or in a small greenhouse to give them colour. As soon as this is effected, the sweet peas are sent to market, where they sell from a shilling to half-a-crown a pot, according to circumstances; even a shilling being sufficient to afford a very handsome profit to the grower.

2.—LATHYRUS TINGITANUS, *Lin.* THE TANGIER PEA.

ENGRAVINGS.—*Bot. Mag.* t. 100; and our *fig.* 2, in Plate 23.

SPECIFIC CHARACTER.—Plant quite smooth. Stems winged. Leaflets ovate, obtuse, mucronulate. Stipules ovate, semi-sagittate, much shorter than the petioles. Peduncles two-flowered, longer than the

leaves. Calycine teeth nearly equal, shorter than the tube. Legumes oblong-linear, much reticulated, compressed, tomentose, with the sutures thick. Seeds hardly angular, variegated with black and brown. —(*G. Don.*)

DESCRIPTION, &c.—The flowers of the Tangier pea are very splendid in appearance, but they want the sweetness that distinguishes those of the preceding species. The standard of the flower of the Tangier pea is of

a brilliant crimson, having all the richness of velvet ; while the wings and keel are of a bright rose-colour. This pea was introduced in 1680, by Dr. Morison, who received it from Tangiers, and it has remained in cultivation ever since. Seeds may be procured at any seed-shop, and the plants require the same care as those of the sweet pea.

3.—*LATHYRUS ARTICULATUS*, *Lin.* THE JOINTED OR WINGED PEA.

ENGRAVINGS.—Bot. Mag. t. 253 ; and our *fig. 4*, in Plate 23.

SPECIFIC CHARACTER.—Stem tetragonal, winged ; lower petioles leafless, linear, acuminate, upper ones bearing 5-6 linear leaflets. Stipules lanceolate, semi-sagittate. Peduncles 1-3-flowered, about

equal in length to the leaves. Calycine teeth nearly equal, shorter than the tube. Legumes rather turgid, finely reticulated and nodose at the seeds, having the seminiferous suture tumid. Seeds compressed, dark purple, rather velvety.—(*G. Don.*)

DESCRIPTION, &c.—The flower consists of a bright red standard with white wings and keel. This pea is a native of the south of Europe, and when it was first introduced, it was called the Spanish pea, because its seeds were sent from Spain to the Botanic Garden, Chelsea, in 1739. It is of rather lower growth than the common sweet pea, seldom rising above three feet high, but it may be sown and treated in the same manner.

4.—*LATHYRUS AMPHICARPOS*, *Lin.* THE UNDER-GROUND OR EARTH-PEA.

ENGRAVINGS.—Swt. Brit. Flow. Gard. t. 236 ; and our *fig. 6*, in Plate 23.

SPECIFIC CHARACTER.—Stems winged, diffuse. Leaflets lanceolate. Tendrils simple. Stipules semi-sagittate, 1-toothed, longer than the

petioles. Peduncles 1-flowered, longer than the leaves. Cauline as well as subterraneous legumes ovate, 2-winged in front, and a little compressed on the sides, 2-seeded.—(*G. Don.*)

DESCRIPTION, &c.—This plant is grown more for its singularity than its beauty. The flowers which appear above ground are pink tinged with blue ; but the underground stems bear flowers and pods, which are quite perfect, and exactly similar to those above-ground, except that every part of the underground plant is whitish. The plant is much smaller than any of the other peas, and rarely grows above a foot high. Seeds may be had in any of the seed-shops, and they should be sown in February in very light soil, to allow the underground shoots to make their way. The plants when nearly full grown are generally earthed up.

5.—*LATHYRUS SATIVUS*, *Lin.* THE CHICKLING VETCH.

ENGRAVINGS.—Bot. Mag. t. 115 ; and our *fig. 3*, in Plate 23.

SPECIFIC CHARACTER.—Plant smoothish. Stems winged. Leaflets linear-oblong. Tendrils trifid. Stipules semi-sagittate, ovate, ciliated, hardly the length of the petioles. Peduncles 1-flowered, longer than

the petioles, bracteolate and articulated at the apex. Calycine segments lanceolate, foliaceous, almost three times the length of the tube. Legumes ovate, broad, short, irregularly reticulated, winged on the back. Seeds trigonal, smooth, rather truncate.—(*G. Don.*)

DESCRIPTION, &c.—The flowers are bright blue, with a faint stain of pink between the standard and the wings. The pods are winged with a deep groove down the back. The plant seldom grows above two feet high, and is much branched. There is a variety with white flowers. This species is a native of France and Spain, where it is grown for feeding horses, and hence its specific name of "*Sativus*," which signifies cultivated. The flour made from the peas when ground, if mixed with an equal quantity of wheat flour, makes excellent bread, but taken alone it produces an extraordinary rigidity of the muscles. In the year 1671, a famine having occurred in Wirtemberg on account of the failure of the wheat crops, the peasants made their bread entirely of this flour. After living upon it for some days, some of them began to find themselves strangely affected ; one man when he bent his arm could not straighten it again ; and a neighbour who laughed at him found that he could not bring his mouth back to its original form, but that he was doomed to wear an eternal grin. The medical men applied

to by the afflicted and terrified people were at a loss how to act, for warm baths, and all the usual remedies for the rigidity produced by cold, seemed to have no effect. In the end, though no one died, yet as it was found impossible to restore the rigid muscles to their natural action, the evil was thought so serious, that the Duke of Wirtemberg issued an edict forbidding the use of this flour in any emergency; and similar edicts have been issued by some of his successors. It was remarkable that at the very time that this flour was producing such unpleasant effects, the green herb was eaten by cattle without injury. Pigs fed on the meal, however, lost the use of their limbs, though they grew very fat lying on the ground. It was observed that the meal from plants grown on a rich strong soil, was much more injurious than that made from plants grown on a poor dry soil.

This *Lathyrus* was introduced into England in 1739, and was grown in the botanic garden at Chelsea; it, however, appears to have been lost, and to have been re-introduced within the last few years. It is now grown by Mr. Groom, of Walworth, and other florists, and is well deserving of a place in the flower-garden from the contrast afforded by its beautiful light blue flowers to the colours of the other species. The seeds should be sown in February or March, as they are frequently a long time before they vegetate; or the seeds may be soaked in water some days before sowing, and only put into the ground when the aril begins to crack and peel off.

6.—*LATHYRUS APHACA*, *Lin.* THE YELLOW VETCHLING.

ENGRAVING.—Eng. Bot. 1167, 2nd edit. vol. vi. t. 1000.

SPECIFIC CHARACTER.—Stems erect; tendrils cylindrical, filiform, leafless (rarely with two leaflets); stipules ovate, sagittate, large; peduncles 1-flowered (rarely 2-flowered), articulated at the apex, furnished

with a pair of small, narrow bracteas; calycine segments twice the length of the tube; legumes much compressed, broad, few-seeded; seeds compressed.—(*G. Don.*)

DESCRIPTION, &c.—A small yellow-flowered British plant, “remarkable for the total abortion of the leaves, except in very young plants,” what appear to be leaves being in fact only the dilated stipules. This vetchling is chiefly met with in the eastern counties of England, between the Thames and the sea. The seeds are very unwholesome, and cause a violent headache if eaten. This plant is not worth cultivating in gardens, except in combination with the following species, when it produces a very striking and novel effect.

7.—*LATHYRUS NISSOLIA*, *Lin.* THE CRIMSON GRASS VETCH.

ENGRAVINGS.—Eng. Bot. t. 112, 2nd edit. vol. vi. t. 1001; and our fig. 5, in Plate 23.

SPECIFIC CHARACTER.—Stem erect; petioles dilated, foliaceous, grass-like, 3-5-nerved; stipules small, subulate, usually wanting;

flowers solitary, on long peduncles; peduncles articulated at the apex, and downy on the upper part, where they bear two little awl-shaped bracteas; legumes compressed, narrow, nerved, reflexed.—(*G. Don.*)

DESCRIPTION, &c.—This beautiful little plant has bright crimson flowers, variegated with purple and white, while the stem and leaves look so much like those of a kind of grass, that the plant can scarcely be detected, even by an experienced botanist, unless when in flower. It is generally found in shady lanes, in woods, or on the grassy banks of a rivulet, where they are shaded by trees; and in these situations, in the months of May and June, it is sure to attract attention by the splendour of its flowers, which in early morning when covered with dew-drops, sparkle in the sun-beams like little rubies. The botanical peculiarities of this plant are that the leaves are simple, and not terminated by tendrils, and they thus afford a remarkable contrast to those of *L. aphaca*, the tendrils of which are very long, and the stipules commonly dilated. Seeds of *L. nissolia* may be procured at any seed-shop, and they require the same treatment as those of the other kinds of *Lathyrus*.

8.—*LATHYRUS HIRSUTUS*, *Lin.* THE ROUGH-PODDER VETCHLING.

ENGRAVINGS.—*Bot. Mag.* t. 1255, *Eng. Bot.* t. 1255, 2nd edit. vol. vi. t. 1002.

SPECIFIC CHARACTER.—Stems winged; leaflets linear-lanceolate, 3-nerved; stipules semi-sagittate, linear, about equal in length to the

petiole; peduncles usually 2-flowered, hardly longer than the leaves; calyx hairy; segments ovate, acuminate, length of the tube; legumes oblong, hairy; seeds globose, warted.—(*G. Don.*)

DESCRIPTION, &c.—The flower consists of a bright crimson standard, pale blue wings, and a white keel. It is a native of the south of Europe; but it has been occasionally found in England, in Essex, and between Bath and Bristol. It is very ornamental, and the seeds, which may be had in any seed-shop, only require the same treatment as those of the other species.

OTHER KINDS OF *LATHYRUS*.

L. SPHÆRICUS, *Retz.*; syn. *L. COCCINEUS*, *All.*; *L. AXILLARIS*, *Lam.*; *L. ANGULATUS*, *Stev.*

The flowers are of a beautiful crimson, and about the size of those of *L. nissolia*; and the plant, which is a native of the south of Europe, was introduced in 1801.

L. CICERA, *Lin.* THE DWARF CHICKLING VETCH.

This plant is a native of Spain, and was introduced in 1633. It has purple and red flowers, and flat pods.

L. ANNUUS, *Lin.*

This species has winged stems, and yellow flowers. It is a native of Spain, and was introduced in 1621.

L. TURGIDUS, *Lam.*

A native of the south of France and the Levant. The flowers have a dark purple standard, and white wings and keel. It was introduced in 1817.

L. CILIATUS, *Guss.*

A native of the Calabrian hills. The flowers are greenish, strongly marked with purple veins.

L. ALATUS, *Tenore.*

A native of Italy, with winged stems, and very large purple flowers; introduced in 1823.

OTHER SPECIES OF *LEGUMINOSÆ*.

Several other ornamental annual plants belonging to this order might be enumerated; particularly the crown-bearing variety of the common pea (*Pisum sativum*), with its tufts of scarlet and white flowers, and several kinds of *Melilotus*, &c. Lord Anson's pea (*Lathyrus Magellanicus*) is included, by some seedsmen, in their lists of annuals; but it is a greenhouse evergreen shrub, which, so far from being an annual, rarely ripens seeds in England. The seeds sold under the name of Lord Anson's pea, are generally those of the Tangier Pea, which we have already described. (See p. 131.)

GENUS VIII.

LABLAB, *Adans.* THE LABLAB.*Lin. Syst.* DIADELPHIA DECANDRIA.

GENERIC CHARACTER.—Calyx tubular, 4-cleft, 3 lower divisions acute. Vexillum with four callosities at the base. Stamens diadelphous. Style compressed, bearded below. Legume compressed. Seeds separated by a cellular substance. Twining herbs, with trifoliate leaves, and white or purple flowers.—(*G. Don.*)

LABLAB VULGARIS, *Savi.* THE BLACK-SEEDED DOLICHOS, OR EGYPTIAN BEAN.

ENGRAVINGS.—Bot. Mag. t. 896, Bot. Reg. t. 830; Swt. Brit. Flow. Gard. 2nd Ser. t. 236; and our *fig.* 12, in Plate 23.

SYNONYMES.—*Dolichos Lablab*, *Lin.*; *Lablavia vulgaris*, *D. Don.*

SPECIFIC CHARACTER.—Legumes oblong, ventricose, acinaciform; pericarp easily separated; seeds ovate, somewhat compressed; gland basilar, hemispherical, furrowed.—(*G. Don.*)

DESCRIPTION, &c.—This splendid plant, though frequently marked in books as a stove perennial, succeeds perfectly well if treated as a hardy annual. The pods are dark purple, as well as the flowers, and the seeds are black. There is a variety with white flowers. A native of Egypt, and also of China; and cultivated in the West Indies for its pods, which are boiled and eaten, as we eat kidney-beans. It was introduced in 1714, by the Duchess of Beaufort. The seeds may now be procured at any seed-shop, generally under the name of *Dolichos Lablab*. They should be raised on a hotbed, in pots, three seeds being sown in each pot, and planted out in May; care being taken to turn the earth out of the pot into a hole prepared for it without breaking the ball. The word Lablab signifies, in Arabic, a twining plant.

CHAPTER XXIII.

BALSAMINACEÆ.

ESSENTIAL CHARACTER.—Sepals 2, small, deciduous, opposite. Petals 4, cruciate; upper one arched and emarginate; the lower one entire and drawn out into a spur. Stamens 5, hypogynous; the 3 lower ones bearing 2-celled anthers, and the 2 upper ones 1-celled anthers. Style none. Stigmas 5. Capsules 5-valved; valves separating with elasticity. Placenta central. Alhumen none.—(*G. Don.*)

DESCRIPTION, &c.—The plants belonging to this order are all annuals with succulent stems and showy flowers. They are comprised in three genera, viz:—Balsamina, the common balsam, the flowers of which are borne singly, each on a separate stalk; Tytonia, the species of which are aquatic stove plants, with the flowers sometimes produced three on one stalk, and sometimes each on a separate stalk; and Impatiens, the Noli-me-tangere of the gardens, the flower-stalks of which are branched, and many-flowered. This order, according to botanical arrangement, should precede *Tropæolacæ*, to which it is very closely allied.

GENUS I.

BALSAMINA, *Riv.* THE BALSAM.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Anthers 5, 2-celled. Stigmas 5, distinct. Valves of capsule bending inwards elastically at the apex. Peduncles 1-flowered.—(*G. Don.*)

DESCRIPTION, &c.—A genus of showy-flowered plants, with succulent stems, mostly natives of the East

Indies ; which have long been great favourites in our greenhouses, and which we shall mention here, as they will also grow in the open air.

1.—BALSAMINA HORTENSIS, *Desp.* THE COMMON OR GARDEN BALSAM.

SYNONYME.—*Impatiens balsamina*, *Lin.*

SPECIFIC CHARACTER.—Pedicels aggregate ; leaves lanceolate, serrated, lower ones opposite ; spur shorter than the flower.—(*G. Don.*)

DESCRIPTION, &c.—The common Balsam is so well known that it needs very little description ; and its varieties are so numerous and so uncertain as to defy enumeration. The colours of these varieties are, white, rose-coloured, red, and purple ; and these colours are occasionally mixed in stripes, spots, and other variegations. The varieties are also single, semi-double, and double. The species is a native of the East Indies, China, and Japan, and it was introduced before 1596, as it is mentioned by Gerard. The plants are generally kept in pots in greenhouses, but they will grow luxuriantly if planted out in a warm border in the open air. The seeds, which may be procured in any seed-shop, should be sown on a moderate hotbed in February or March ; and as soon as the plants are two or three inches high, they should be carefully transplanted into small pots, taking care to shade them for some time after transplanting. The pots should be plunged in the hotbed, but they should be allowed plenty of air, in the middle of the day when the weather is favourable. In about a fortnight or less, they should be removed into rather larger pots, without breaking the ball of earth round the roots ; and afterwards as they grow, they should be transplanted into larger and larger pots, taking care that each pot is well drained by broken potsherds being put in the bottom, and that the plants are supplied with abundance of water. If the roots are kept warm, by the pots being plunged in the hotbed, and are supplied with abundance of water, which is prevented from stagnating round them by the pots being well drained, while the plants themselves are supplied with abundance of air, when the weather will permit, the growth of the plants will be luxuriant, and the flowers astonishingly fine. As soon as the flower-buds are formed, the plants should be placed in the greenhouse ; or planted out, without breaking the ball of earth, in a warm border in the open ground. In the latter case, the plants should be shaded for a day or two after planting, and supplied abundantly with water. The seeds may be sown in a warm rich border in the open air ; but in this case the plants do not flower till very late in the autumn, and the flowers are very seldom fine.

2.—BALSAMINA COCCINEA, *Dec.* THE SCARLET BALSAM.

SYNONYME.—*Impatiens coccinea*, *Sims.*

ENGRAVING.—*Bot. Mag.* t. 1256.

SPECIFIC CHARACTER.—Pedicels aggregate. Leaves oblong-oval, serrated. Spur incurved, about equal in length to the flower.—(*G. Don.*)

DESCRIPTION, &c.—A splendid plant, with bright scarlet flowers remarkable for the great length of their spurs. The flowers are large, and are produced in great abundance ; they are sometimes streaked with white, but this is rather a variation than a permanent variety. The plant is a native of the East Indies, and was introduced in 1808, but we do not know where seeds are now to be procured. *B. cornuta*, the Horned Balsam, a native of Ceylon, and Cochin-China, introduced in 1826, closely resembles *B. coccinea* in the shape of its flowers, but their colours are dark purple or pure white. The leaves of *B. cornuta* are of a dusky green and sweet-scented, and a decoction of them is said to be used in Cochin-China as a wash for the hair.



1. *Salbamina Mastersiana*. — 2. *Mirabilis Jalapa*. — 3. *Impatiens noli-me-tangere*.

3.—BALSAMINA MASTERSIANA, *Paxt.* THE NEPAUL BALSAM.

ENGRAVINGS.—*Paxt.* Mag. of Bot. vol. vi. p. 75; and our *fig.* 1, in Plate 24.

remote, pointed serratures. Flowers large, of a purplish red, axillary, solitary. Spur curved, nearly the length of the flower.—(*Paxt.*)

SPECIFIC CHARACTER.—Leaves opposite, linear-lanceolate, with

DESCRIPTION, &c.—This plant is evidently very nearly allied to *B. coccinea* and *B. cornuta*, and may probably be the same as the last-mentioned species, or a very slight variety of it. It was found by Mr. Gibson, collector to the Duke of Devonshire, growing on the Khoseea Hills, and seeds of it were sent by him to Chatsworth, in the autumn of 1837. The plant was named in honour of Mr. Masters, head gardener at the Botanic Garden, Calcutta. We do not know where seeds are to be procured; but as the plants raised at Chatsworth flowered abundantly during the whole summer of 1838, and ripened abundance of seed, we have no doubt seeds of this species will soon be plentiful in the seed-shops. The plant is perhaps rather hardier than the common garden balsam, and the culture is exactly the same. “A light rich soil,” says Mr. Paxton, “frequent shifting, a generous supply of water, due exposure to light, and a slight moist bottom heat, are the chief requisites previously to the appearance of the flowers.” Mr. Paxton also recommends placing the plants, when removed from the hotbed, into a moderately warm house, before putting them into the cool house, or open ground, where they are to flower. “The advantage of this transference will be apparent in the larger size, deeper colour, and greater duration of the blossoms. The art in cultivating balsams to perfection,” Mr. Paxton continues, “is to keep them continually growing after the seeds have germinated.” This is done by warmth and moisture; and this is the reason that balsams sown in the open air, for want of sufficient warmth and moisture to their roots, seldom, if ever, attain the same beauty as those raised in a hotbed.

GENUS II.

IMPATIENS, *Riv.* THE TOUCH-ME-NOT.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Anthers 5, three of which are 2-celled, and two in front of the upper petal 1-celled. Stigmas 5, joined. Valves of capsule revolute, inwardly from the base to the apex. Peduncles axillary, branched, many-flowered—(*G. Don.*)

DESCRIPTION, &c.—All the plants belonging to this genus are remarkable for the elasticity of the valves of the capsules, which when touched throw out the seeds with great force. This quality is possessed in a greater or less degree by all the plants belonging to the order; and also by the plants belonging to the order *Geraniaceæ*, to which *Balsaminaceæ* is very nearly allied, but it is more perceptible in *Impatiens* than in any other genus. The scientific name of *Impatiens*, and the popular names of *Noli-me-tangere*, or Touch-me-not, and Jumping Betty, allude to this property.

1.—IMPATIENS NOLI-ME-TANGERE, *Lin.* THE COMMON NOLI-ME-TANGERE, OR TOUCH-ME-NOT.

ENGRAVINGS.—*Eng. Bot.* t. 937, 2nd edit. vol. ii. t. 327; and our *fig.* 3, in Plate 24.

leaves, and spreading under them; flowers pendulous; spur recurved at the end; leaves ovate, coarsely toothed; joints of stem swollen.—(*G. Don.*)

SPECIFIC CHARACTER.—Peduncles 3-4-flowered, shorter than the

DESCRIPTION, &c.—The *Noli-me-tangere* is a well-known plant, so strikingly resembling the balsams in its stems and leaves, that it was formerly called the yellow balsam. The stem, which grows about two feet high, is

very succulent, and is thickened at the joints like that of the balsam; the flower is large and rather handsome, but the most remarkable part of the plant is the capsule. "This," says Sir J. E. Smith, "consists of a central angular column, surrounded by five elastic valves, so weakly attached at the base when ripe, that they spring from it at the slightest touch, at the same time curling up and scattering the few seeds they previously enclosed. The seeds so scattered will remain in the ground and certainly grow next spring, but if collected and allowed to dry before they are sown they fail to vegetate."—(*Eng. Bot.* 2nd edit. vol. ii. p. 57.) The elasticity of the valves of the capsule is so great, that even though prepared to expect it, few persons who touch the capsule for the first time can help starting. "The root is formed of branched and fleshy fibres," and these fibres are frequently seen above ground descending even from the first joint of the stem when the plant is kept moist. It is a native of most parts of Europe, and it is found wild in England in Westmoreland, &c., and in Wales: in short, wherever there are moist rich valleys among mountains. It is said to be poisonous to most animals except goats, who eat it freely. In gardens it is rarely cultivated, partly on account of the difficulty of keeping the seeds sufficiently moist to vegetate, and partly from its coarse and weedy habit of growth.

OTHER SPECIES OF IMPATIENS.

These have all been introduced, and are occasionally to be found in gardens, though liable to the same objections against their constant culture as the common Touch-me-not. They have also all the fault of soon withering when gathered, so as to be quite unfit for bouquets. The culture of all is alike; the seeds merely require scattering on the ground, but the plants must be supplied with abundance of water, or they will soon wither.

I. TRIFLORA, *Willd.*

This species, which is a native of Ceylon, introduced in 1818, has large pale red flowers, which it produces early in June.

I. FULVA, *Nutt.*, *Eng. Bot.* 2nd edit. Suppt. t. 327*, syn. I. BIFLORA, *Swt. Brit. Flow. Gard.* t. 43.

The handsomest species of the genus, having dark yellow flowers with red spots inside. It is a native of North America, where it grows near springs and rivulets, in shady situations, and whence it was introduced in 1818, but it has lately been found wild on the banks of the river Wey in Surrey. It is generally considered to bear a great resemblance to the common *Noli-me-tangere*, and is often confounded with it. When, however, we saw the two species growing together in the grounds of W. Borrer, Esq., at Henfield, Sussex, in the autumn of 1838, we were struck with the difference between them. Seeds of *I. fulva* may be purchased at Charlwood's, and in other seed-shops, under the name of *I. biflora*; but though they keep longer than those of *I. Noli-me-tangere*, they soon lose the power of vegetating.

I. PALLIDA, *Nutt.*

A native of North America, introduced in 1817, with pale yellow flowers and bluish-green leaves.

I. PARVIFLORA, *Dec.*

This is the species vulgarly called Jumping Betty; the flowers are very small and of a pale dingy yellow, but the capsules are large and spring asunder with great force when touched. It is quite hardy, and is found wild in Russia and also in North America. Seeds may be had at Charlwood's.

I. TRIPETALA, *Roxb.*

A very showy species with scarlet flowers having a deep yellow nectary. It is a native of the East Indies on the mountains of Silhet, and was introduced in 1825.

I. CRISTATA, *Wall.*

The flowers are yellow, with very small purple dots, and the stem purple. The plant is a native of Chinese Tartary, and was introduced in 1827.

I. CALYCINA, *Wall.*

A native of Nepaul. The flowers, which are very large, are yellow, and netted with purple veins.

There are several other kinds natives of Nepaul, with purple, yellow, or rose-coloured flowers, and one kind which is fragrant, but none of these have as yet been introduced.

CHAPTER XXIV.

NYCTAGINACEÆ.

ESSENTIAL CHARACTER.—Perianth tubular, somewhat coloured, contracted in the middle; its limb entire or toothed, plaited in aestivation; becoming indurated at the base. Stamens definite, hypogynous. Anthers 2-celled. Ovary superior, with a single erect ovule. Style 1. Stigma 1. Fruit, a thin utricle, enclosed within the enlarged persistent base of the calyx. Seed without its proper integuments, its

testa being coherent with the utricle; embryo with foliaceous cotyledons, wrapping round flowery albumen. Radicle inferior. Plumula inconspicuous. Leaves opposite, and almost always unequal; sometimes alternate. Flowers axillary or terminal, clustered or solitary, having an involucre which is either common or proper, in one piece or in several pieces, sometimes minute.—*Lindl.*

GENUS I.

MIRABILIS, *Lin.* THE MARVEL OF PERU.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx inferior. Corolla funnel-form, superior. Nectary globular, enclosing the germ.—(*Lin.*)

1.—MIRABILIS JALAPA, *Lin.* THE COMMON MARVEL OF PERU.

ENGRAVINGS.—Bot. Mag. t. 371; and our *fig.* 2, in Plate 24.

SPECIFIC CHARACTER.—Flowers clustered together, truncate, erect.—(*Lin.*)

DESCRIPTION, &c.—The Marvel of Peru, though generally treated as an annual, is in fact a tuberous-rooted perennial, the roots of which may be taken up in winter, like those of the Dahlia or the common potato, and planted out again in spring. It ripens seeds, however, so abundantly, that few persons think it worth while to preserve the roots, particularly as the seedlings always flower the first year, and the flowers produced by them, differ very little from those produced by the tubers, either in size or colour. The high-sounding name of the Marvel of Peru, seems very ill applied to this plant, as there is nothing very remarkable about it. The plant, however, having been introduced very soon after the discovery of Peru, when everything belonging to the new world was thought strange and wonderful, and being found to bear flowers of several different shades of colour at the same time, it received this name, and Gerard tells us that it was also called the wonder of the world. The flowers, says this quaint writer, “remain open the whole day, and are closed only at night, and so perish, one flower lasting but only one day, like the true Ephemeron or Hemeroallis. This marvellous variety doth not

without cause bring admiration to all that observe it ; for if the flowers be gathered and reserved in several papers, and compared with those flowers that will spring and flourish the next day, you shall easily perceive that one is not like another in colour, though you shall compare one hundred which flower one day, and another which flower the next day, and so on during the whole time of their flowering." A much better description of this plant is given by Parkinson, who observes that the flowers are sometimes red and yellow on one plant, and sometimes purplish, the colours being occasionally mixed and blended together. He also mentions that there are numerous varieties, some white, some yellow, and some purple, while the species is generally a deep rose, as shown in our plate. Gerard is mistaken in asserting that the flowers always close at night ; on the contrary, as Parkinson observes, the flowers frequently do not open till evening, and indeed in the West Indies, where the plant is common, it is called the four-o'clock plant, from its generally opening about that hour in the afternoon. The fact is that the flowers will not bear intense heat, and though under our cloudy skies they will generally remain open all day, they shrink from the powerful rays of the sun. The plant is a native of both the East and West Indies. It is not known when it was introduced, but it must have been early, as Gerard, writing in 1596, speaks of having had it for several years in cultivation in his garden. Linnæus changed Gerard's name of *Mirabilis Peruviana* for this plant, for *M. Jalapa*, because finding that the tubers possessed a purgative property, he thought they were used in preparing the drug called jalap.

Seeds may be procured in any seed-shop ; and if sown on a hotbed in March, the plants may be turned into the open air in May or June, and will flower in July. If the seeds are sown in the open air in April, the plants will succeed equally well, but they will not flower before the latter end of August or September. We may here repeat what we have before suggested for the convenience of those who have no regular gardener, and consequently do not wish the trouble of a hotbed, that all annual plants raised on one may be purchased from the nurserymen. Our neighbour, Mr. Hopgood, of the Bayswater nursery, sells plants thus raised, ready for planting out into the open border, at from twopence to fourpence a dozen, according to their size and rarity ; and we have no doubt that this is about the usual price. Thus at a very trifling expense, and with very little trouble, a garden may be supplied in April or May with the choicest flowers (varying in kinds, according to the taste of the purchaser), which will continue to adorn it till they are destroyed by frost.

OTHER KINDS OF MIRABILIS.

M. DICHOTOMA, *Lin.*

This species, which is not so hardy as the common kind, has smaller flowers, and they do not vary from their original purplish red. This is a native of Mexico and the West Indies. It was formerly supposed that the tubers of this plant produced the Jalap, the name of which is said to be derived from Xalapa, in Mexico ; but Linnæus, as we have before observed, thought that this drug was made from the tubers of the common Marvel of Peru, and later botanists have attributed it to a species of *Convolvulus* or *Ipomœa*.

M. LONGIFLORA, *Lin.*

This species has long-tubed white flowers, that are very sweet-scented, and it is common in our gardens. The stalks are hairy and clammy, and they are so weak that they would fall to the ground if not supported. This species is a native of Mexico, and was introduced in 1759.



Anagallis (Monell.) var. *lilacina*. — 2. *Anagallis latifolia*. — 3. *Anagallis* (Monell.)
 4. *Nolana atrophilifolia*. — 5. *Nolana prostrata*.

M. VISCOSA, *Cav.*, syn. OXYBAPHUS VISCOSUS, *Bot. Mag.* t. 434.

This species, Curtis tells us, is an annual, growing about two feet high. The whole plant is clammy, "and if bruised smells somewhat disagreeably. The flowers do not open at any particular time like those" of the common Marvel of Peru, and each contains only three stamens. When the flowers fall, which they do very soon after expanding, "the calyx closes on the germen, enlarges, droops, and becomes deeply plaited; on the ripening of the seed it turns brown, expands, and is suspended like a little umbrella over the seed, which when perfectly ripe, drops out on the ground." This plant is a native of Peru, and it was first raised in England in 1796 from seeds sent to the Marchioness of Bute, by Professor Ortega, of Madrid, who had obtained them from Peru.

CHAPTER XXV.

PRIMULACEÆ.

ESSENTIAL CHARACTER.—Calyx 5-cleft, persistent. Corolla regular, monopetalous, 5-cleft. Stamens 5, epipetalous, opposite the segments of the corolla. Stigma capitate. Capsule valvate, 1-celled. Placenta central. Seeds numerous, peltate. Albumen none.—Leaves usually opposite, rarely alternate, usually radical.—(*G. Don.*)

DESCRIPTION, &c.—This order contains the primrose, cowslip, polyanthus, cyclamen, &c., all well-known plants, but perennials. The genus *Anagallis* is indeed the only one belonging to the order which contains annuals, and even these might be called perennials, as most of them may, with care, be kept alive several years.

GENUS I.

ANAGALLIS, *Lin.* THE PIMPERNEL.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx 5-parted. Corolla wheel-shaped, 5-cleft, deciduous. Stamens 5. Filaments bearded, distinct at the base. Capsule truncated.

DESCRIPTION, &c.—The genus *Anagallis* is remarkable for the beauty and elegance of its flowers. Even the common Pimpernel or Shepherd's Weather-glass (*A. arvensis*), is one of the prettiest of our common British weeds, and the Bog Pimpernel (*A. tenella*) is recommended for cultivation by Dr. Lindley, as a most delicate and elegant flower. (See *Ladies' Botany*, vol. ii. p. 161.) The flower of the *Anagallis*, though monopetalous, like all the Primulaceæ, is so deeply lobed that it seems to consist of five petals. The seed-vessel is also remarkable, as it resembles an egg-shaped box, opening in the middle, and the lid coming off like a little cap with a feather in it, and showing the seeds closely packed up in the remaining half of the box below. The stems of the Pimpernels are prostrate and angular; and the flowers, which are produced in great abundance, are generally very showy.

1.—ANAGALLIS INDICA, *Swt.* THE INDIAN PIMPERNEL.

ENGRAVING.—*Swt. Brit. Flow. Gard.* t. 132.

SPECIFIC CHARACTER.—Stem ascending, branched, slightly winged. Leaves sessile, ovate-cordate, rough at the margin, somewhat blunt, clasping the stem, 5-nerved at the base, dotted beneath. Segments of the calyx acute, keeled, somewhat shorter than the petals, which are toothed.—(*Sweet.*)

DESCRIPTION, &c.—A very pretty little plant having bright blue flowers, with a reddish purple style, and golden yellow anthers. The stem is nearly erect and angular; and the leaves, which are rather broad,

are dotted on the under side. The plant is a native of Nepaul, from which country its seeds were sent to England by Dr. Wallich, in 1824. It is very hardy, and if the seeds, which may be purchased in any seed-shop, are sown in a light rich soil, in April or the first week in May, the plants will begin to flower in July, and will continue producing masses of bright blue flowers, and ripening abundance of seed, till killed by frost.

2.—ANAGALLIS LATIFOLIA, *Lin.* THE BROAD-LEAVED PIMPERNEL.

ENGRAVINGS.—Bot. Mag. t. 2389; and our *fig.* 2, in Plate 25.

SPECIFIC CHARACTER.—Leaves cordate, stem clasping. Stems compressed.—(*Lin.*)

DESCRIPTION, &c.—A very pretty species, a native of Spain; introduced in 1759. It is as hardy as *A. indica*, and if sown in April will flower in July.

3.—ANAGALLIS MONELLI, *Lin.* THE ITALIAN PIMPERNEL.

ENGRAVINGS.—Bot. Mag. t. 319; Bot. Gard. t. 399.

VARIETIES.—*A. M.* 2. *Willmoreana*, Bot. Mag. t. 3380. A very beautiful variety, with large dark purple flowers, which are pink on the under side of the petals. The stems are long, and require support. It is a native of Madeira, whence it was introduced in 1834, by John Willmore, Esq., of Oldford, near Birmingham.

A. M. 3. *ilacina*, D. Don, Brit. Flow. Gard, 2nd Ser. t. 377; and our *fig.* 1, in Plate 25. A very splendid variety, with large pink

flowers. The origin of this plant is not known, but it was brought into notice in 1827 by the Honourable W. Fox Strangways.

A. M. 4. *Webbiana*, syn. *A. Webbiana*, Penny; Bot. Gard. t. 343. A native of the Canary Isles, introduced by P. B. Webb, Esq. in 1828; and which flowered first in the Milford nursery, near Godalming.

SPECIFIC CHARACTER.—Leaves lanceolate. Stem erect.—(*Lin.*)

DESCRIPTION, &c.—A plant with pale blue flowers, generally treated in England as a greenhouse perennial, and propagated by cuttings. When grown as an annual the seeds must be raised in a hotbed in February, and planted out in May. It is a native of Italy and Spain, whence it was introduced in 1648. Clusius gave the specific name to this plant, in compliment to his friend Johannes Monellius.

CHAPTER XXVI.

NOLANACEÆ.

ESSENTIAL CHARACTER.—Corolla regular, monopetalous with a plicate aestivation. Stamens 5, epipetalous. Drupe solitary or 5 together, con-

taining each a 2 or 4-celled bony nut. Embryo spiral.—Trailing plants. Leaves alternate, undivided. Peduncles extra-axillary.—(*G. Don.*)

GENUS I.

NOLANA, *Lin.* THE NOLANA.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx 5-cleft. Corolla campanulate, regular. Drupes usually 5, containing each a 3-4-celled bony putamen. Seeds roundish.—(*G. Don.*)

DESCRIPTION, &c.—Few genera appear to have given more trouble to botanists than the genus *Nolana*, it having been placed by different botanists in no less than three different orders, and now having an order constituted expressly for it. Jussieu placed the *Nolana* in the order *Boraginaceæ*, but besides its bearing no natural resemblance to the commonest plants of that order, for example Viper's Bugloss and Forget-me-not, it differs

botanically in having its corolla plaited in the bud, which the plants belonging to the order *Boraginaceæ* have not. To a common observer, the *Nolana* appears most naturally to belong to the *Convolvulaceæ*: indeed the resemblance between the flowers of *Convolvulus tricolor* and those of *Nolana atriplicifolia* is so striking, that they might easily be supposed varieties of one species. The capsule of the *Convolvulus* is, however, a dry berry, while that of the *Nolana* is a fleshy drupe; the difference between which terms will be readily perceived by remembering that a currant is a berry, and a plum a drupe. De Candolle placed the *Nolana* among the *Solanaceæ*, but the fruit of the *Solanaceæ* is a fleshy berry, as, for example, the potato-apple, and very different from the *Nolana*, the fruit or capsule of which is fleshy, with a hard bony nut or stone. To obviate all these difficulties, Dr. Lindley formed the order *Nolanaceæ*, in which he has placed the genus *Nolana* and two other genera formerly considered to belong to *Convolvulaceæ*.

1.—NOLANA PROSTRATA, *Lin.* THE PROSTRATE NOLANA.

ENGRAVINGS.—Bot. Mag. 731; and our *fig.* 5, in Plate 25.

SPECIFIC CHARACTER.—Stems prostrate; leaves ovate-oblong; calyx | pyramidal, with triangularly sagittate segments, furnished with spur-like processes at the base. Drupes 2-4-celled.—(*G. Don.*)

DESCRIPTION, &c.—This was the first species of the genus discovered, and from it Linnæus, who first named and described it, gave it the name of *Nolana*, from *nola*, a little bell, in allusion to the bell-shaped form of its corolla. The plant is a native of Peru, and seeds of it were first sent from that country to Spain. From Spain they were received by Professor Van Royen at Leyden, who sent them to Linnæus as the seeds of a kind of *Belladonna* or Nightshade. About the same time M. Forskahl, one of the persons employed by the king of Denmark to collect new plants in the East, having obtained some of these seeds (possibly from Linnæus), sent them with a number of Egyptian seeds in 1761 to Miller, who was then curator of the Chelsea Botanic Garden. The plant was at first supposed tender, but it is now found quite hardy, only requiring to be sown very thin, and to have the plants kept free from weeds when they come up. The plants will not bear transplanting except when very young, from the extraordinary length of the root, which in a flowering plant, though not branched and very slender, has been often found three feet long. The stems are naturally prostrate, and if left to themselves, they will soon cover the bed on which they grow with a thick mass of leaves and flowers. The seeds should be sown in March or April, and the plants will come in flower in July.

2.—NOLANA PARADOXA, *Lindl.* THE PARADOXICAL NOLANA.

ENGRAVINGS.—Bot. Reg. t. 365; and our *fig.* 3, in Plate 25.

SPECIFIC CHARACTER.—Stems prostrate, hairy; leaves ovate, obtuse, | pilose; segments of calyx triangular; corolla campanulately funnel-shaped; drupes cumulated, 1-seeded.

DESCRIPTION, &c.—This species was named *paradoxa* by Dr. Lindley, from “the deviation in the structure of its fruit from that of the other species of *Nolana*.” The fruit of *N. prostrata* consists of five fleshy carpels or drupes growing closely together, and each containing four cells, every cell having within it one seed. Now the fruit of *N. paradoxa* consists of twenty carpels, each of which contains one cell and one seed; thus forming an exemplification of the modern theory, that all fruits divided into cells are in fact only several distinct one-celled fruits grown together. The flower of *N. paradoxa* is paler than that of *N. prostrata*, and not so distinctly marked with dark veins. The plant is a native of Chili, and was introduced in 1823, by seeds presented to the London Horticultural Society by Francis Place, Esq. It is quite hardy, and its seeds may be procured in most of the seed-shops. The culture is exactly similar to that of *N. prostrata*.

3.—*NOLANA TENELLA*, Lindl. THE SLENDER *NOLANA*.

ENGRAVINGS.—Bot. Mag. t. 2604, Bot. Gard. t. 207, both under the name of *N. paradoxa*.

SYNONYMS.—*N. paradoxa*, Hook.: Violet-coloured *Nolana*.

SPECIFIC CHARACTER.—Clothed with viscid down; stems filiform;

petioles ciliated; leaves ovate, obtuse at both ends; calyx campanulate, 2-lobed, 5-angled, one of the lobes emarginate, the other tridentate; ovarium 5-lobed.—Peduncles hairy, filiform. Corolla pale-blue, or violet, with a paler eye. Stamens villous, enclosed.—(*G. Don.*)

DESCRIPTION, &c.—The flower is funnel-shaped, of a blue, or violet-colour, with a white star in the centre. The calyx differs from that of *N. prostrata* in the want of the spur-like processes towards the base. The seeds of this plant were received from Chili in 1822, by Mr. Place, who also introduced *N. paradoxa*, and hence, probably, the confusion between the two species. *N. tenella* first flowered at the seat of the late John Walker, Esq., at Southgate, and its seeds are frequently sold in the seed-shops under the name of *N. paradoxa*. The culture is the same as for the other, with the exception of the seeds requiring to be sown thicker, as the plants generally send up an upright shoot, and do not spread so much as those of the other species.

4.—*NOLANA ATRIPPLICIFOLIA*, D. Don. THE ATRIPLEX-LEAVED *NOLANA*.

ENGRAVINGS.—Swt. Brit. Flow. Gard. 2nd Series, t. 305; and our fig. 4, in Plate 25.

SYNONYME.—*N. grandiflora*, Lehm.

SPECIFIC CHARACTER.—Stems procumbent, rather villous; calyx campanulate, with ovate-lanceolate, acute connivent segments; leaves spatulate, radical ones large.—(*G. Don.*)

DESCRIPTION, &c.—This is by far the most beautiful species. The flower is large and very handsome, with the three colours of bright blue, clear white, and yellow, distinctly marked. The leaves are broad and fleshy, and they are produced in such abundance on the procumbent stems, as soon to cover the bed, and thus afford a rich background to the splendid flowers with their bright clear colours, which every here and there rise up among them. We have already mentioned the resemblance between the flowers of this species and those of *Convolvulus tricolor*, and we have been lately much struck with it on comparing beds of the two flowers planted near together in the nursery of our neighbour Mr. Hopgood. The *Nolana* is however much the more beautiful, as the flowers are not only much larger, but their colours are clearer and more brilliant. The *Nolana atriplicifolia* is a native of Peru, introduced in 1834, and it seeds so abundantly that it is already common in the seed-shops. It requires a rich loamy soil, in which it may be sown in March or April, when it will flower in July; or if wanted to flower earlier, it may be raised on a slight hotbed, and planted out the first week in May.

OTHER KINDS OF *NOLANA*.

The following kinds have not yet been introduced; but judging from the species we have already in our gardens, we think them so desirable, that we give their names in the hope of aiding in pointing them out to the attention of travellers.

N. SPATULATA, Ruiz et Pavon.

Flowers very large, and white tinged with purple. Stem upright. A native of the hills in Peru, so probably quite hardy.

N. CORONATA, Ruiz et Pavon.

Flowers about the size of *N. atriplicifolia*; white, with a narrow blue border. Leaves shining, and on long footstalks. Capsules long and slender. Stem prostrate. A native of the hills of Peru, growing in dry sandy soil.

N. INFLATA, *Ruiz et Pavon.*

Flowers white, with blue anthers; calyx inflated. Stems purple and angular. Plant prostrate. Leaves downy and sinuated. A native of the sandy hills near Cumana.

N. REVOLUTA, *Ruiz et Pavon.*

Flowers large and of a bluish-violet, peduncles very short. Stems white and angular. Plant procumbent. A native of Peru in sandy places.

CHAPTER XXVII.

CONVOLVULACEÆ.

ESSENTIAL CHARACTER.—Calyx of 5 sepals, rarely 5-toothed, persistent. Corolla monopetalous. Limb of five plaits or five lobes, with a twisted aestivation. Stamens 5, epipetalous. Hypogynous disk annular, surrounding the ovary. Capsule dehiscing valvately, rarely transversely. Seeds rounded on one side, and flattened on the other. Albumen mucilaginous. Cotyledons corrugated.—Usually twining herbs. Leaves alternate, entire or lobed. Peduncles axillary or terminal; one or many flowered.—(*G. Don.*)

DESCRIPTION, &c.—The Convolvulaceæ are all twining plants, most of which are herbaceous, and many of these annuals. They have all large showy flowers, and are of very easy culture. According to modern botanists, there are thirty-five in the order Convolvulaceæ, most of which contain annuals; but we shall confine ourselves to the two genera *Convolvulus* and *Ipomœa*, (both of which were instituted by Linnæus,) as under these names the plants are best known, and we shall only indicate the new names in the synonyms.

GENUS I.

CONVOLVULUS, *Choissy.* THE CONVULVULUS OR BINDWEED.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Stamens inclosed. Stigma 2-lobed; lobes teretely filiform.

DESCRIPTION, &c.—The name of *Convolvulus* was given by Linnæus to a number of climbing, showy-flowered plants, which since his time have been divided into five or six different genera; but to prevent confusion, we shall describe these plants under their old name of *Convolvulus*, which alludes to the folding of the flowers in the bud.

1.—CONVOLVULUS TRICOLOR, *Lin.* THE THREE-COLOURED CONVULVULUS.

ENGRAVINGS.—Bot. Mag. t. 27, and our *fig.* 2, in Plate 26.

SYNONYME.—*Convolvulus minor*, *Hort.*

SPECIFIC CHARACTER.—Stem declinate, terete, beset with small,

soft, white hairs. Leaves ovate-lanceolate, spatulate, hairy, ciliated. Peduncles 1-flowered, bibracteate, longer than the leaves. Sepals ovate-lanceolate, acute.—(*G. Don.*)

DESCRIPTION, &c.—A beautiful flower with three distinct colours, yellow, blue, and white, well known under the name of *Convolvulus minor*, or the dwarf *Convolvulus*, in our gardens. There are two varieties of it, one white, and the other striped, but they do not always come true from seed. The species is a native of Spain, Portugal, Sicily, and the north of Africa; and it was introduced by Parkinson before 1629; as he calls it the small blue Spanish Bindweed in his *Paradisus*, and says he had the seed of “Guillaume Boel,” who brought it from Portugal. Some botanists suppose this species to have been originally only found in Barbary; but whether introduced or indigenous, it is now a common weed both in Spain and Portugal. The flowers always folding in

gloomy weather and at night, the French call it Belle-de-Jour. The seeds are now common in every seed-shop. When the seeds are sown, a shallow drill should be made for them, forming a circle; or three or four straight drills should be made across a bed in which the seeds may be dropped and covered lightly over. When the plants come up, they should be thinned out so as to stand an inch apart. The plants require a dry situation, and rather a rich light soil. The usual time of sowing is April, in which case the plants will come into flower in July; but as they are quite hardy the seeds may be sown in autumn to stand the winter, when the plants will flower in May.

2.—CONVOLVULUS PURPUREUS, Lin. THE PURPLE CONVULVULUS.

ENGRAVING.—Bot. Mag. t. 113.

SYNONYMS.—Pharbitis hispida, *Choisy*; Ipomœa glandulifera, *Ruiz et Pavon*; Convolvulus major, *Hort.*

VARIETIES.—C. p. 2 elatior, *Sims*, Bot. Mag. t. 1005; and our *fig. 6*, in Plate 25. A most beautiful plant with white flowers, marked with five spots like the eyes in a peacock's tail, elegantly shaded with blue and carmine. It comes true from seed, and is so distinct that Dr. Sims, who first described it, had marked it as a species, till on closer examination he discovered that it did not possess characters sufficient to establish a specific difference. It is quite hardy, and only requires to be sown in a warm sheltered situation, and in a rich light soil. It was first observed in 1804 in the Fulham nursery, and

from its great beauty it soon became a favourite, but it is now rarely to be met with.

C. p. 3 varius, *Sims*, Bot. Mag. t. 1682. A very distinct variety marked with dark blue stripes on a white ground, and the rays red and white. This kind was introduced about 1810 by the Hon. and Rev. W. Herbert, who received the seeds from Cadiz, and who informed Dr. Sims in 1815, (when the plant was figured in the *Bot. Mag.*) that the colours had come true from seed in Mr. Herbert's garden for five generations.

SPECIFIC CHARACTER.—Leaves cordate, acuminate, entire; auricles diverging. Peduncles usually exceeding the leaves, 3—5 flowered, somewhat umbellate. Sepals ovate-lanceolate, acute—(*G. Don.*)

DESCRIPTION, &c.—The purple or major Convolvulus has long been a favourite in our gardens. It is a native of Asia and South America, and it appears to have been introduced into England at a very early period, as it is mentioned in 1629 by Parkinson, who calls it the greater blue Bindweed, or Bell-flower with round leaves. Parkinson also mentions that this kind and Convolvulus Nil were sent to England from Italy, "but whether they had them from the East Indies or some of the Eastern countries on this side," he adds, "we know not; but they thrive reasonable well in our country if the year be anything kindly." This species was placed in the genus Convolvulus by Linnæus; it was afterwards included in the genus Ipomœa by Zuccagni, who published some botanical works at Florence, in 1806; and lastly it was placed in the genus Pharbitis, of which indeed it may be considered the type, by Choisy a Swiss botanist, in 1821. The botanical differences between Convolvulus and Pharbitis are, that in the former the ovary is two-celled and two-seeded, while in the latter the ovary is three and sometimes four-celled, and three-seeded. The seeds of *C. purpureus* may be bought in any seed-shop under the name of Convolvulus major; and they should either be sown at the foot of a wall, or stuck like peas, as their long slender stems (which are sometimes ten feet or twelve feet high) require support. This species being more tender than *C. tricolor*, requires a warmer situation; and when wanted to flower early, the plants may be raised in a hotbed, and planted out in May. The flowers vary very much; displaying many shades and combinations of white, reddish purple, bluish purple, and violet, besides the decided varieties which we have already mentioned. The seeds should be sown in the same way as those of the Minor Convolvulus.

3.—CONVOLVULUS SICULUS, Lin. THE SICILIAN CONVULVULUS.

ENGRAVINGS.—Bot. Mag. t. 445; and our *fig. 4*, in Plate 25.

SPECIFIC CHARACTER.—Stems trailing. Leaves cordate-ovate, superior ones acute, all hairy. Peduncles 1-flowered, shorter than the

leaves. Bractæas lanceolate below the calyx. Sepals hairy, ovate, acute.—Stems filiform, angular, beset with adpressed hairs above and spreading ones at bottom.—(*G. Don.*)

DESCRIPTION, &c.—This species has smaller flowers than any other of the genus. The stems are slender and

twining a little, but not like the other species so much so as to require support. On the contrary the slender thread-like stems of this curious little plant lie on the ground, and only wind round each other. This species is a native of Sicily, the coast of Barbary, and Greece; and it was introduced before 1640, according to Parkinson, by Mr. James Boel. It is quite hardy, and seeds may be had at Carter's. From the smallness of its flowers, however, it is rarely cultivated in flower-gardens.

4.—CONVOLVULUS ELONGATUS, Willd. BROUSSONET'S TRAILING BINDWEED.

ENGRAVINGS.—Bot. Reg. t. 498; and our *fig.* 1, in Plate 25.

SPECIFIC CHARACTER.—Leaves cordate-ovate, cuspidate. Peduncles | 1—2-flowered, longer than the leaves. Bracteas linear-subulate, shorter than the pedicels. Calyxes ciliated.—(*G. Don.*)

DESCRIPTION, &c.—This plant was first discovered in the Canary Isles by M. Broussonet, who supposed it to be a variety of *C. siculus*. It does indeed strongly resemble that species excepting that its flowers are white tinged with pink at the edges, and with the throat yellow inside. Willdenow, however, named it *C. elongatus* from the great length of the footstalks of the flowers. It is a trailing species, very hardy, and of the easiest culture, requiring no other care than that of sowing the seeds in the common garden soil; but it is now very rarely met with in gardens.

5.—CONVOLVULUS INVOLUCRATUS, Ker. THE LEAFY-CUPPED OR GUINEA BINDWEED.

ENGRAVINGS.—Bot. Reg. t. 318; Bot. Mag. t. 2205; and our *fig.* 8, in Plate 25.

SYNONYMES.—*C. bicolor*, *Roxb.*; *Ipomœa bicolor*, *Swt.*; *Calyptostegia Keriana*, *Swt.*; *Shuterea bicolor*, *Choisy*.

SPECIFIC CHARACTER.—Stem villous. Leaves ovate-cordate, entire, or usually sinuately-angular. Peduncles usually 1-flowered, bracteate, exceeding the leaves. Outer sepals large, involucreting the flower.—(*G. Don.*)

DESCRIPTION, &c.—This is rather a remarkable species, from the very curious and leafy calyx. The flower, which somewhat resembles that of the *Thunbergia alata*, is of a pale yellow, with a deep reddish purple centre. The leaves are shining, but covered with fine hairs. The species is a native of Africa, but it has also been found in the East Indies. It was introduced in 1818, and was thought not likely to live out of the stove. It is found however to flower beautifully with the common treatment of tender annuals; that is, raised in a hotbed, and planted out when of sufficient size. As the plant is, however, rather tender, it is best in most situations to transplant it in May into a pot, and not to plant out in the open ground till June. The name of a two-coloured *Convolvulus* is in Carter's catalogue, but it can hardly be the same species, as it is described as a hardy annual.

OTHER SPECIES OF CONVULVULUS.

All the following species have been introduced, but, with only one or two exceptions, we do not know where seeds of them are now to be procured.

C. PENTAPETALOIDES, Lin.

This species, which is sometimes called the Majorca *Convolvulus*, resembles *C. tricolor*, but it is a trailing plant, and has much smaller flowers. It is a native of Majorca and the Ionian Isles, and was introduced in 1789.

C. STRICTUS, Lehen.

Has white flowers tinged with pink; and its habit of growth resembles that of *C. tricolor*. It is a native of Egypt, and was introduced in 1822. This is called the Egyptian *Convolvulus*.

C. UNDULATUS, *Cav.*; syn. C. EVOLVULOIDES, *Desf.*

This species, which is generally called the African Convolvulus, has large flowers, resembling those of *C. tricolor*, except in the rim or limb, as botanists call it, which is pink instead of blue; but there is a variety which is blue and white. It is a prostrate plant, and a free flowerer. It was introduced in 1816.

C. PERUVIANUS, *Spreng.*; syn. IPOMŒA CUSPIDATA, *Ruiz et Pavon*; PHARBITIS CUSPIDATA, *G. Don.*

The Peruvian Convolvulus has large purple flowers. It is a native of Peru, in stony places, and was introduced in 1732.

GENUS II.

IPOMŒA, *Lin.* THE IPOMŒA.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Stigma 2-lobed. Lobes capitate globose.

DESCRIPTION, &c.—The difference between the genera *Ipomœa* and *Convolvulus* is very slight, consisting principally in the shape of the lobes of the stigma, which in *Ipomœa* form a globose head, while in *Convolvulus* they are slender and thread-like. The division of the genera was made by Linnæus, and it has been followed by all subsequent botanists. *Ipomœa* signifies, *to strike the sight*,—in allusion to the beauty of the flowers.

1.—IPOMŒA COCCINEA, *Lin.* THE SCARLET IPOMŒA.

ENGRAVINGS.—Bot. Mag. t. 221; and our *fig.* 9, in Plate 25.

SYNONYMES.—*Quamoclit coccinea*, *G. Don.*; *Ipomœa stylosa*, *Comm.*; *Convolvulus coccineus*, *Spreng.*

VARIETIES.—*I. c.* 2 *pubescens*, *Cham et Schlecht.* This variety has the leaves covered with a soft dense down, and never three-lobed.

It is a native of Mexico.

I. c. 3 *luteola*, *Willd.*; syn. *I. luteola*, *Jacq.*; *Quamoclit luteola*, *G. Don.*, has the flowers of a golden yellow.

SPECIFIC CHARACTER.—Leaves cordate, acuminate, angular at the base. Peduncles 3—6-flowered. Calyxes warted, awned.—(*G. Don.*)

DESCRIPTION, &c.—This species is a twining plant, with heart-shaped leaves, and bright scarlet flowers. It is a native of Carolina, and the West India Islands, whence it was introduced in 1759, being first cultivated by Miller, when he was curator of the Botanic Garden, at Chelsea. Since then it has been generally grown in nurseries, though but seldom in private flower-gardens; partly, no doubt, from its being confounded with some of the tender kinds, which it strongly resembles. The scarlet *Ipomœa* is, however, quite hardy, and only requires sowing in the open ground like other annuals. Three seeds are usually sown about four inches asunder in the form of a triangle; and when the young plants are about six or eight inches high, a stick is put in the centre for them to twine round. A slight iron frame with an umbrella-top, or any other frame in wire or lattice-work, may be adopted, or a piece of packthread stretched out for them, or the young plants may be trained against a wall or paling. They do best, however, without tying or nailing, and when suffered to twist themselves round anything that may be near them. We saw some in the autumn of 1838 in the Lewisham nursery, which had twisted themselves round some young apple trees, and which hung down in graceful festoons from the branches. Seeds of this species may be had at Carter's and other seed-shops; and if sown in March or April the plants will flower in July or August. If wanted to flower early, the plants may be raised on a hotbed, and transplanted in March or April, when they will flower in May or June. They are said to succeed best in a very rich soil and in a warm sheltered situation; but in these situations the flowers, though larger, are generally of a

paler colour. *Ipomœa phœnicea*, Roxb.; *Quamoclit phœnicea*, Choisy; *I. coccinea*, Bot. Rep. t. 449, the Crimson Ipomœa, which is sometimes confused with the Scarlet Ipomœa, is a hothouse climber, a native of the East Indies, which will not live in England in the open air. There are also several perennial Ipomœas with scarlet or crimson flowers which require to be constantly kept in a hothouse.

2.—IPOMŒA QUAMOCLIT, Lam. THE COMMON QUAMOCLIT OR WINGED-LEAVED IPOMŒA.

ENGRAVINGS.—Bot. Mag. t. 244, and our fig. 10, in Plate 25.

SYNONYMS.—*Convolvulus pinnatus*, Lam.; *Quamoclit vulgaris* Choisy; Scarlet Jasmine.

VARIETY.—I. Q. 2 albiflora, G. Don. Flowers white.

SPECIFIC CHARACTER.—Leaves pinnatifid, even to the middle nerve. Segments linear, parallel, acute. Peduncles 1-flowered. Sepals ovate-lanceolate.—(G. Don.)

DESCRIPTION, &c.—The flowers are scarlet, and in the shape of those of a jasmine, and the leaves are curious. The plant is a native of the East Indies and South America, and is much more tender than the scarlet Ipomœa. The kind from America is said to have two flowers on each footstalk instead of one, and to be hardier than the other; but the difference appears to be too slight, and too uncertain, to constitute a regular variety. The species was introduced before 1629, as it is mentioned by Parkinson. It is generally kept in the greenhouse, but if raised in a hot-bed, it may be planted out late in May or the beginning of June, in warm, sheltered situations and good soil, where it will flower freely, and if the summer be favourable it will ripen its seed. The plants intended to produce seed are, however, generally kept in the greenhouse or stove.

3.—IPOMŒA CŒRULEA, Roxb. THE CELESTIAL BLUE IPOMŒA.

ENGRAVINGS.—Bot. Reg. t. 276.

SYNONYMS.—*Convolvulus Nil*, Lin.; *C. hederaceus*, Lin.; *Ipomœa Nil*, Roth.; *I. hepaticifolia*, Hayne; *Pharbitis Nil*, Choisy.

SPECIFIC CHARACTER.—Hairy; leaves cordate, 3-lobed; interme-

diate lobe dilated at the base, and not contracted. Peduncles 2-3-flowered, commonly exceeding the petioles. Sepals ovate-lanceolate, hispid at the base.—(G. Don.)

DESCRIPTION, &c.—This plant, which is supposed to be the true *Convolvulus Nil* of Linnæus, differs from the plant usually bearing that name, in having the segments of the limb of its corolla circular and very shallow, instead of deep and tapering to a point. The flowers also of a pale delicate celestial blue, softening into white, and, when fading, with a very slight admixture of pink. The leaves are curiously shaped, and the stems and the points of the sepals of the calyxes are of a dark red. *Ipomœa cœrulea* is a native of the East Indies, where it is generally found in hedges and on old walls. It is also found wild in the tropical regions of Africa and South America. It is supposed to be the species introduced before the time of Gerard (1596), which that author tells us the Arabians called *Nil*, and the Italians *Campana azurea*, and *Fior de' notti*; but if this were the case, it had been long lost to our gardens, and was re-introduced from India in 1817, by Dr. Roxburgh. It is tender, and though it will flower in the open air, it should be raised on a hot-bed, and not planted out till the middle of June. It rarely flowers till the latter end of August or beginning of September.

4.—IPOMŒA HEDERACEA, Jacq. THE IVY-LEAVED IPOMŒA.

ENGRAVING.—Bot. Reg. t. 85.

SYNONYMS.—*I. barbata*, Roth.; *I. Nil*, Pursh.; *Convolvulus Nil*, Michx.; *I. scabra*, Forsk.; *Pharbitis hederacea*, Choisy; *P. Purshii*, G. Don; *P. barbata*, G. Don; *P. Forskœli*, G. Don; *P. Dillenii*, G. Don.

VARIETIES.—I. h. 2 purpurea, Hort. Corolla funnel-shaped and purple.

I. h. 3. scabra, Hort.; *I. scabra*, Schultes; *I. scabrida*, Ram.;

Pharbitis scabrida, G. Don. Corolla white.

I. h. 4. villosa, Hort. ? *I. villosa*, Ruiz et Pavon. Flowers very large.

I. h. 5. punctata, Hort. ? *I. punctata*, Pers. Calyx dotted.

SPECIFIC CHARACTER.—Pubescent; leaves cordate, deeply 3-lobed, lobes acuminate, central one ventricose. Peduncles 1-3-flowered; tube of the calyx bearded. Bractæas lacinated and slightly recurved. Corolla somewhat funnel-shaped.

DESCRIPTION, &c.—This flower, from the beautiful blue of its flowers, and from its being only seen to

advantage when it has just opened them in the morning, is generally known in America by the name of "The Morning Glory." In England it is often called *Convolvulus nil*; but there appears a great confusion respecting it and *I. cœrulea*. It is a native of North America, where it is found generally in Virginia and Carolina, in hedges and among trees near rivers. It was introduced in 1729, and has since frequently been sent over under different names. Seeds of it may be procured at Carter's in Holborn, (where there is an excellent collection of seeds of Ipomœas) under the name of *I. hederacea*; and they may be sown in a warm border in April or May, or they may be raised on a hot-bed in March. This species requires a light rich soil, not too dry, and it seldom flowers till August or September.

5.—IPOMŒA BONA NOX, *Lin.* THE NIGHT-FLOWERING IPOMŒA.

ENGRAVINGS.—Bot. Mag. t. 752; and our *fig.* 3, in Plate 25, of *Ipomœa Bona-nox purpurascens*.

SYNONYMES.—*Convolvulus Bona-nox*, *Spreng.*; *Argyrea Bona-nox*, *Swt.*; *Calonyction speciosum*, *Choisy*; ? *Ipomœa longiflora*, *Willd.*

VARIETY.—*I. B. 2 purpurascens*, *Ker.*, Bot. Reg. t. 290; *I. muricata*, *Jacq.*; *I. turbinata*, *Lagas.*; *Convolvulus muricatus*, *Lin.*;

Calonyction Bona-nox, var. muricatum, Choisy; *C. muricatum, G. Don.* Corolla purple. Stem and peduncles muricated from prickles.

SPECIFIC CHARACTER.—Leaves cordate, entire, acuminate, or hastately 3-5-lobed; corolla with a long cylindrical tube, and spreading limb. Lobes rounded, mucronate.

DESCRIPTION, &c.—The species has a white delightfully fragrant flower with a yellowish tube, which only opens at sunset, and droops at sunrise. The variety figured in our plate, differs in having a purple flower. Both are natives of Persia and the East Indies; and were introduced about 1773; the seeds, which can be purchased at Carter's, may be sown, and the young plants treated exactly as directed for the other tender species. They require a light rich soil, or a mixture of loam, peat, and sand. They should be raised on a hot-bed, and not planted out till the middle of June; and then only in a warm sheltered situation open to the south, and sheltered by a wall.

5.—IPOMŒA BARBIGERA, *Swt.* THE BEARD-BEARING IPOMŒA.

ENGRAVINGS.—*Swt. Brit. Flow. Gard.* t. 86; and our *fig.* 5, in Plate 25.

SYNONYME.—*Pharbitis barbigeræ*.—(*G. Don.*)

SPECIFIC CHARACTER.—Stem downy. Leaves cordate, acuminate,

entire, hairy on both surfaces, hind lobes rounded. Peduncles 1-flowered, shorter than the petioles, bibracteate near the calyx. Sepals acuminate, spreadingly reflexed at the apex, and densely bearded at the base.—(*G. Don.*)

DESCRIPTION, &c.—A beautiful species, bearing considerable resemblance to the ivy-leaved *Ipomœa*, but smaller. A native of North America, and quite hardy; only requiring to be sown in the open air, and furnished with a prop to cling to, when of sufficient length.

6.—IPOMŒA RUBRO-CŒRULEA, *Hook.* THE REDDISH-BLUE OR MEXICAN IPOMŒA.

ENGRAVINGS.—Bot. Mag. t. 3297; *Pact. Mag. of Bot.*, vol. 3, p. 99; *Botanist*, No. 52; and our *fig.* 7, in Plate 25.

SYNONYMES.—*I. Hookerii*, *G. Don.* *I. rubro-cyanca*, *Hort.* Mr. G. Don suggests that it may be a species of *Rivea*.

SPECIFIC CHARACTER.—Smooth; leaves on long petioles, deeply

cordate, acuminate. Peduncles 3-4-flowered, fleshy, subracemose, Calyx smooth. Sepals (small) erect, adpressed, linear, awl-shaped, with a whitish margin. Corolla, very large, funnel-shaped. Limb 5-angled, angles mucronate. Stigma two lobed.—(*Hook.*)

DESCRIPTION, &c.—This is by far the most splendid flower belonging to the genus. The corolla is very large, and while in the bud it appears red and white, but when it expands, it is of a most beautiful and brilliant blue; and when it fades, which it does the same day that it expands, the limb of the corolla curls up, and becomes a bright rose-colour. The most extraordinary part of this change is that both the blue and rose-colour are quite bright and fresh, and that there is no intermediate shade of dingy purple or faded pink, as is the case generally with blue flowers which change their colour in fading. This species is a native of Mexico, where it grows to an

extraordinary size. It was discovered in 1831, by Mr. Samuel Richardson, (an officer of the Anglo-Mexican Mining Association), and seeds of it were sent by him to J. D. Powles, Esq. of Stamford Hill, which were liberally distributed by that gentleman. It was first called *Ipomœa rubro-cyanea*, but in 1834, it was figured in the Bot. Mag., and its present name given to it by Sir W. J. Hooker. It is remarkable for the abundance of its flowers, and the great length of time during which it continues to produce them. Many persons are deterred from cultivating this beautiful plant from the idea that it requires a stove to bring its flowers to perfection. This, however, is not the case, as it requires no more care in its cultivation than any other tender annual. In the spring of 1835, Mr. Rauch, one of Mr. Loudon's assistants, had some seeds of this plant given to him. They were raised in a hot-bed in February; but only one plant came up, and this was brought into the open air in May. In July it began to flower, and it continued producing a succession of large and magnificent blossoms of the most brilliant ultra-marine blue till October. The flowers opened every morning three or four at a time, and shrivelled up before night into what had the appearance of buds edged with deep rose colour, and which had quite withered before the following morning. This plant produced several pods of ripe seeds. We have since heard of several plants succeeding under similar treatment. It must be observed, however, that the soil should be good and light, and the situation warm and sheltered, and yet open to the sun. Seeds may be had from Mr. Kernan, Great Russell Street, Covent Garden, and other seedsmen.

OTHER SPECIES OF IPOMŒA.

Nearly all the following species are marked as stove annuals; but as they are all very beautiful, and seeds of many of them are to be obtained, we give some particulars of each, that those who like to try them in the open air, may be able to choose which they would prefer. There are, indeed, very few stove annuals that will not succeed in the open air, if raised in a hot-bed, and not planted out till the latter end of May or beginning of June. The situation should be a warm border open to the south, and backed by a wall, and the plants may be sheltered occasionally when thought necessary, by a hand-glass or flower-pot turned over them till their roots have taken possession of the soil. All tender annuals raised in a hot-bed or stove, should also be gradually exposed to a cooler temperature before planting out, and they may even be set in the open air for a day or two in the flower-pots they were raised in, before turning them into the ground.

I. SEROTINA, *Ræm. et Schultes*; syn. QUAMOCLIT SEROTINA, *G. Don.*; CONVULVULUS SEROTINUS, *Dec.*

This species, which has very large broad leaves, and was introduced in 1824, is said to be nearly allied to *I. coccinea*.

I. HEDERIFOLIA, *Lin.*; syn. Q. HEDERIFOLIA, *G. Don.*

This species has ivy-shaped leaves, and long violet-coloured flowers. It is a native of the West Indies, and was introduced in 1773.

I. TRILOBA, *Lin.*; syn. Q. TRILOBA, *G. Don.*

A native of South America; introduced in 1752. The flowers are somewhat cylindrical, and of a violet colour. Seeds may be had at Carter's.

I. TRIDENTATA, *Roth.*; syn. EVOLVULUS TRIDENTATUS, *Lin.* CONVULVULUS VISCIDUS, *Roxb. &c. &c.*

This species has small yellow flowers. It is a native of the East Indies, and was introduced in 1778.

I. FILICAULIS, *Blum.* ; syn. I. DENTICULATA, *R. Br. Bot. Reg.* t. 317, &c., &c.

Flowers pale yellow, leaves linear, and stems threadlike. A native of the East Indies, introduced in 1778.

I. INVOLUCRATA, *Beauvais.*

Flowers large and dark rose-coloured, surrounded by two large bractees, forming an involucre. A native of Guinea ; introduced in 1822.

I. SESSILIFLORA, *Roth.* ; syn. CONVULVULUS HISPIDUS, *Vahl.*, &c., &c.

Flowers small, rose-coloured. There is a variety with white flowers, produced in round sessile heads. A native of Nepaul, introduced in 1816.

I. OCHRACEA, *G. Don.* ; syn. CONVULVULUS OCHRACEUS, *Lindl.*, *Bot. Reg.* t. 1060.

The limb of the corolla is flat, with crenulated lobes ; the colour is an orange-yellow, having the tube deep purple inside. A native of Guinea on the Gold Coast ; introduced in 1826.

I. OBSCURA, *Ker.*, *Bot. Reg.* t. 239 ; I. SOLANIFOLIA, *Burm.*, &c., &c.

Nearly allied to the last species, with pale yellow or cream-coloured flowers, having a red centre. A native of the East Indies ; first grown in England in Dr. Sherard's garden at Eltham, in 1732 ; but which is generally included in every parcel of seeds sent by unbotanical collectors from India to this country.

I. LEUCANTHA, *Jacq.*

A native of America, with white flowers ; introduced in 1823.

I. SIBERICA, *Jacq.*

Strongly resembling the common little wild Convolvulus of our fields and hedges, but with smaller flowers, which are white or very pale pink, with a yellow centre. A native of Siberia, introduced in 1779.

I. VIOLACEA, *Lin.* ; syn. CONVULVULUS INDICUS, *Miller's Dict.*, &c.

Flowers large, and of a pale purple. A native of South America, introduced in 1792.

I. PUDIBUNDA, *G. Don.* ; syn. CONVULVULUS PUDIBUNDUS, *Lindl.*, *Bot. Reg.* t. 999.

Corolla of a fine rose colour ; tube inflated. A native of St. Vincent's ; introduced in 1822.

I. PILOSA, *Sweet.* ; syn. C. ALBICANS, *Wall.*, &c.

Flowers small, pink ; plant hairy ; leaves clothed with white wool beneath. A native of the East Indies ; introduced in 1815.

I. TRICHOCARPA, *Ell.* ; &c., &c.

A native of Carolina ; introduced 1732. The flowers are very large, and of a pale purple, and the capsules are globose and hairy. Seeds may be procured at Carter's ; and they may either be sown in the open air in April, or raised on a hot-bed, and planted out in May. This species flowers in July and August.

I. DASYSERMA, *Jacq.* ; syn. I. TUBERCULATA, *Ker.*, *Bot. Reg.* t. 36 ; C. DIGITATIS, *Roxb.*, &c., &c.

Dark straw-colour flowers, with a pale purple tube. The leaves are deeply palmate, and the stems pink. A native of the East Indies ; introduced in 1815. This is probably the *I. eriosperma* of the seed-shops.

I. DISSECTA, *R. Br.*

Leaves palmate, 7-parted ; flowers white. A native of New Holland ; introduced in 1815.

I. PEST-TIGRIDIS, *Lin.* ; &c. &c.

Leaves shaped like a tiger's foot, whence the name. Flowers purplish, in heads, and surrounded by long bracteas. A native of the East Indies ; introduced in 1732. Seeds may be had at Carter's.

I. HEPATICIFOLIA, *Lin.* ; &c. &c.

A native of Ceylon and China, with purplish flowers ; introduced in 1759. Seeds may be had at Charlwood's.

I. PARVIFLORA, *Vahl.* ; &c.

Small purplish flowers. This is the *I. triloba* and *I. sanguinea* of some gardens. A native of Santa Cruz ; introduced in 1822.

I. BUCHANANI, *Choisy* ; I. SALICIFOLIA, *Roxb.*

Flowers white. A native of Bengal ; introduced in 1816.

 OTHER SPECIES OF CONVULVULACEÆ.

Notwithstanding the great number of showy ornamental plants which we have already enumerated as belonging to this order, there are many others, the principal of which (as we are confined for space) we shall give below, without entering into full botanical details respecting their different genera, in the same way as we have before done with some of the species of each genus.

CALYSTEGIA GENICULATUS, *Lehm.*

Flower pink, silky, and 5-lobed. Leaves downy. A native of Australia ; introduced in 1826.

PORANA RACEMOSA, *Roxb.*, syn. DINETUS RACEMOSUS. *Swt. Brit. Flow. Gard.* t. 127 ; &c. &c.

A twining plant, with small white starry flowers. A native of Nepaul ; introduced in 1823. It is quite hardy, and a very free flowerer, but we do not know where seeds can be obtained. There is another species with large rose-coloured flowers (*P. grandiflora*) which has not yet been introduced. Both species are well deserving of cultivation in this country, from their hardiness, the great abundance of their flowers, and the extraordinary rapidity of their growth. Porana signifies to spread.

PHARBITIS DIVERSIFOLIA, *Lindl.*, *Bot. Reg.* 1988.

A very pretty species, about half the size of the common major Convolvulus, to which it is very nearly allied. The flowers are purple marked with bright crimson rays, and the leaves are entire when young, but become 3-lobed when fully grown. A native of Mexico, whence it was introduced in 1836. It has been also found in Peru. The name Pharbitis is taken from a Greek word, signifying colour.

CRESSA CRETICA, *Lin.*

A low plant, with white flowers, which are produced in small heads. A native of the south of Europe ; introduced in 1822.

EVOLVULUS LINIFOLIUS, *Lin.*

A native of the West Indies and New Holland, with narrow canescent leaves, and small blue flowers. Introduced in 1782.

CUSCUTA EUROPEUS, *Lin.*, and C. EPITHYMUM, *Lin.* THE GREATER AND LESSER DODDER.

These curious parasites are, we believe, the only plants of that description which are natives of Britain. The seed germinates in the ground, but the plant soon begins to throw out short side roots, which twine themselves round any plant that may be within their reach, and serve as mouths to suck nourishment from it. The original root in the earth withers away as soon as the side roots have attached themselves, and the parasite is thus left to depend for its sustenance entirely on the plant which affords its support. The Dodder has small pinkish flowers, but no leaves; and, as it destroys whatever it attaches itself to, particularly oats, it is sometimes very injurious to the farmer.

C. VERRUCOSA, *Swt. Brit. Flow. Gard.* t. 6. THE NEPAUL DODDER.

This species is deserving of cultivation for its pretty, white, bell-shaped flowers, which are delightfully fragrant, resembling the scent of violets and cowslips mixed. This plant is a native of Nepaul, and was brought to England in 1822. The seeds may be sown in a pot with some of the commoner kinds of Geranium (*Pelargonium*), or in the open ground near ivy. The plants will soon come up, and will send out a number of short roots like teeth, which they will fix into the plant near them, twining themselves round it in a very curious manner. We have seen this plant flowering abundantly in the nursery of the late Mr. Malcolm, at Kensington, and we have no doubt it may be procured from his successor, Mr. Forest.

Nearly all the plants belonging to the order *Convolvulaceæ* have numerous synonymes (though we have rarely given more than two or three), on account of the great number of changes that have taken place in the genera. In all cases, we have given the name by which the plant appears to be most generally known in the seed-shops as the principal one, in order to save our readers from having much trouble in identifying it.

CHAPTER XXVIII.

POLEMONIACEÆ.

<p>ESSENTIAL CHARACTER.—Calyx 5-cleft or 5-toothed. Corolla rotate or funnel-shaped, 5-lobed. Stamens 5, epipetalous. Style long. Stigma 3-lobed. Capsule 3-celled, 3-valved. Placenta central. Seeds</p>	<p>angular or compressed. Albumen fleshy.—Leaves alternate, simple, pinnatifid or pinnate. Flowers numerous and terminal or axillary, or solitary.—(<i>G. Don.</i>)</p>
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DESCRIPTION, &c.—This order takes its name from the Greek Valerian (*Polemonium*), but many of the plants contained in it differ so much from this prototype as scarcely to be recognised. The genus belonging to this order, which contains the most beautiful flowers, is the *Phlox*, but the species are nearly all perennials. *Gilia* is another genus containing beautiful flowers, and most of these are annuals. The *Leptosiphons* are very pretty hardy flowers. There are said to be some very handsome annuals in the genus *Hugelia*, Benth., which were seen by Douglas in California, but which have not yet been introduced; the flowers of this genus resemble those of *Gilia*, but some are yellow and some a deep blue. Some other genera of Californian annuals described by Douglas, and which appear very ornamental, also belong to this order.



1. *Phlox Drummondii*. 2. *Leptosiphon densiflorus*. 3. *Leptosiphon androsaceus*.

GENUS I.

PHLOX, *Lin.* THE PHLOX.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx deeply 5-cleft, connivent. Corolla salver-shaped; tube elongated; limb twisted in æstivation, with cuneated segments. Stamens inserted above the middle of the tube. Cells of capsule 1-seeded.—(*G. Don.*)

DESCRIPTION, &c.—The word *Phlox* signifies flame, and it is supposed to have been applied to this genus in allusion to the flame-like shape of the bud. The species are all beautiful, and bear a great family likeness to each other. The only annual among them is *Phlox Drummondii*.

PHLOX DRUMMONDI, *Hook.* DRUMMOND'S PHLOX.

ENGRAVINGS.—Bot. Mag. t. 3441; Bot. Reg. t. 1949; Swt. Brit. Flow. Gard. 2nd Ser. t. 316; Botanist, No. 15; and our *fig. 1*, in Plate 27.

SPECIFIC CHARACTER.—Stems erect, simple at bottom, but a little branched at top, beset with spreading hairs, as well as the edges of the leaves, calyxes, bracteas, &c.; leaves ovate-lanceolate, half stem-

clasping, all mucronate and downy, lower ones opposite, upper ones alternate; panicle trichotomously corymbose; flowers on very short pedicels; calycine segments linear-subulate, mucronate, a little reflexed; tube of corolla much curved, hairy, three times longer than the calyx; segments of corolla imbricate, euneate, obtuse, entire.—(*G. Don.*)

DESCRIPTION, &c.—Nothing can be a stronger proof of the great beauty of this species than the great number of times that it has been figured in the botanical periodicals, notwithstanding its very recent introduction. It is indeed one of the most beautiful annual flowers that we have; and it is remarkable, not only for the splendour of its colours, but for their very great variety. We have ourselves ten or twelve plants quite distinct in their colours, varying from a deep rose-colour velvet hue to a pale lilac-like pink, all raised from the seed of one plant, which ripened with us in the open air in the summer of 1838 at Bayswater. Two of these heads of flowers are copied in Plate 27. This splendid *Phlox* was discovered by Drummond, a botanical collector sent out by the Glasgow Botanical Society, at Texas in Mexico in 1835; and it is particularly interesting as it is one of the last plants that he sent over. Soon afterwards Mr. Drummond visited Cuba, where he was seized with fever, and died in the prime of life without completing half the researches which he had contemplated. For this reason Sir W. J. Hooker has very judiciously named this plant *Phlox Drummondii*, that it may “serve as a frequent memento of its unfortunate discoverer.” Though the seeds were first sent to England only in 1835, the plant seeds so freely, and has become so great a favourite, that it is already common everywhere. It was at first supposed to require a greenhouse, but it is now found to flower much better in the open air, and a more splendid sight than a bed of seedlings can scarcely be imagined; every flower though of the deepest carmine has its petals of a pale blush colour on the under side, and every petal though of the palest pink has a dark carmine spot at its base. Thus the variety of colours displayed in a bed of these flowers almost exceeds description, and when they are seen under a bright sun, and agitated by a gentle breeze, the effect is extraordinarily brilliant. The culture of the *Phlox Drummondii* generally resembles that of the half-hardy annuals, though the plant itself is quite hardy. The seeds, which may be bought at any seed-shop, should be sown in pots in February, and placed in a gentle hotbed, or kept under shelter in the dwelling-house. Early in May the plants may be turned out into the open border, and in June they will be splendidly in flower; or by sowing the seed in pots and plunging the pots into a strong hotbed, or the tan-pit of a stove, flowers may be

produced early in May or even in April. We saw some beautiful flowers in the first week in May 1839, fully expanded, in the garden of Mr. Groom, florist, Walworth, which had been treated in this manner. If raised in the open ground, the seeds should be sown in April, and the plants will not flower till July. When any very splendid flower is produced, it may be propagated by cuttings, which must be kept in heat all the winter and planted out in spring; but as plants thus procured are very inferior to those raised from seed, it is better to take the chance of a bed of seedlings, and select the best, if any should be wanted of peculiar beauty. Seedlings flower very well, kept singly in pots, and placed in a balcony, or under a veranda.

GENUS II.

LEPTOSIPHON, *Benth.* THE LEPTOSIPHON.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx tubularly-campanulate. Lobes linear, subulate. Corolla funnel-shaped. Tube very long, slender. Limb campanulate, with oval obtuse lobes. Stamens inserted at the throat. Cells of capsule many-seeded.—(*G. Don.*)

DESCRIPTION, &c.—These are some of the Californian annuals sent home by Douglas, and they are valuable not only as being very pretty, but as being quite hardy. The name of *Leptosiphon* signifies slender tube.

1.—LEPTOSIPHON ANDROSACEUS, *Benth.* THE ANDROSACE-LIKE LEPTOSIPHON.

ENGRAVINGS.—Hort. Trans. vol. i. New Ser., *fig.* 1 in t. 18; Bot. Mag. t. 3491; Bot. Reg. t. 1710; Bot. Gard. t. 593; Paxt. Mag. of Bot. vol. iii. p. 219; and our *fig.* 3, in Plate 27.

SPECIFIC CHARACTER.—Leaves 5—7-cleft. Segments oblong-linear. Tube of corolla 2—3 times longer than the limb. Stamens 3 times shorter than the limb of the corolla.—(*G. Don.*)

DESCRIPTION, &c.—The lively colours and numerous flowers of this little plant make it a desirable addition to our flower-gardens, but it has the great fault, common to many of the Californian annuals, of closing its flowers at an early hour of the day. The flowers vary from different degrees of lilac and blue to white, but they have always a black eye, and bright yellow anthers and stigmas, and the tube is usually red. This species is a native of California, and is one of the plants sent home by Douglas, in 1833. It is quite hardy, but as the heat of the summer is apt to wither its roots, it does best when sown so as to flower in spring or autumn. Seeds may be procured at any seed-shop, and with regard to their culture, we cannot do better than copy some observations sent to us by the same intelligent and experienced gardener who assisted us with some remarks on flower culture at the commencement of this work.

“An economical way of rearing these, and probably all annuals which require to be sown very thick to make masses, is to sow the seeds in the autumn, say about the first week in September, on any trodden path, or other very hard bottom, first covering it about an inch thick with light soil. Here the young plants will grow all the winter; and as soon as the flower-beds are dug and prepared in spring, which is in February, March, or April, according to circumstances, the young seedlings should be taken up with the spade in patches, and laid on the flower-bed. All that remains is to fill up the openings between the patches with soil, and to press them gently down, so that the surface of the bed may be covered evenly. Of course by this process the beds may either be filled, each with one kind of flower, or with several kinds, according to the fancy of the gardener; and as the plants will be in full bloom early in May, they will have every advantage of sowing themselves, combined

with the neatness attendant on spring sowing. To explain what is meant by this, it may be observed that at the latter end of autumn the flower-beds in every garden present a very untidy appearance; the ground is not only covered with dead leaves and stalks, but it has become rough and uneven from frequent rains, and to make it look well, it requires to be, what the gardeners call, dressed in October. This dressing, which consists of digging or forking the bed, and then raking it, must of course disturb and indeed destroy the seedlings. It is, therefore, necessarily dispensed with in those gardens where plants are permitted to sow themselves, and the beds have consequently an untidy look the whole year. The care of the seedlings also prevents the planting of crocuses, snow-drops, and the earlier kinds of Narcissus, as putting the bulbs into the ground would occasion blanks in the seedlings which would be very conspicuous when the plants came into flower. By the plan above mentioned of sowing the seeds of the Californian annuals in some remote corner of the garden, and bringing them by spadefuls to the beds when wanted in spring, the flower-garden may be kept in a state of beauty and neatness all the year. As soon as the annuals have done flowering, and the beds have been dressed in October, they may be planted with wall-flowers brought forward for the purpose and potted the preceding May, and which will give the buds a lively appearance during winter. When these have flowered, being biennials, they will die off, and may be cleared away; and the beds, after being dressed, may be planted with the crocuses, &c., which should have been potted the previous August, and will soon flower after they are transferred to the open ground. When these are over, the beds may be smoothed for the Californian annuals, which are to be transferred to them by spadefuls as before directed. When these wither from the heat of summer, the beds may be filled with Petunias, Verbenas, &c.; and when these fade they may be succeeded by fresh patches of Californian annuals sown in spring as before directed for the autumn sowing, and which will keep the beds in beauty till October. Where Petunias and Verbenas are not plentiful, spring-sown annuals may be made to supply their place, and to succeed the autumn-sown ones."

2.—LEPTOSIPHON DENSIFLORUS, *Benth.* THE CLOSE-FLOWERED LEPTOSIPHON.

ENGRAVINGS.—Hort. Trans. vol. i. New Ser. t. 18, *fig. 2*; Bot. Reg. t. 1725; Bot. Mag. t. 3578; Paxt. Mag. of Bot. vol. iii. p. 220; and our *fig. 2*, in Plate 27.

SPECIFIC CHARACTER.—Leaves 9-11-cleft. Segments subulate, erect, with revolute margins. Tube of corolla shorter than the limb. —(*G. Don.*)

DESCRIPTION, &c.—The flowers of this species, though larger, are neither so brilliant in their colours nor so elegant in their shape, as those of *L. androsaceus*. The want of brilliancy in the colour is occasioned by the centre or eye being white, and the tube being short, thick, and pale; the petals also are round instead of pointed. The plant is a native of California, where it was discovered, and whence its seeds were sent to England in 1833 by Douglas, at the same time as those of *L. androsaceus*; the culture also is the same as for that plant.

OTHER SPECIES OF LEPTOSIPHON.

The following species were discovered by Douglas, but have not yet been introduced.

L. GRANDIFLORUS, Benth.

Flowers large and blue, with a golden yellow or dark purple centre.

L. LUTEUS, Benth.

Flowers yellow, with a deep orange-coloured centre.

L. PARVIFLORUS, Benth.

Flowers small, and of a pale yellow, with a darker centre. They are all low plants, flowering profusely the whole summer, or till killed by the heat and dryness; and as they are all quite hardy, and resemble in habits the species already introduced, they would only require to be sown two or three times at different periods, to keep up a succession of flowers nearly all the year.

GENUS III.

COLLOMIA, *Nutt.* THE COLLOMIA.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx campanulate, 5-cleft. Corolla salver-shaped; tube slender; segments of the limb oblong, entire. Stamens inserted towards the middle of the tube. Cells of capsule 1-2-seeded.—(*G. Don.*)

DESCRIPTION, &c.—The word *Collomia* is derived from *Collo*, glue; in reference to the seeds being enveloped in a kind of gluey, sticking substance. The plants are all annuals, with small flowers, disposed in dense heads, and with very large bracteas. All the species have an untidy weedy appearance, and are scarcely worth cultivation.

1.—COLLOMIA HETEROPHYLLA, *Hook.* THE VARIOUS-LEAVED COLLOMIA.

SYNONYME.—*Gilia heterophylla, Doug.*

ENGRAVINGS.—*Bot. Mag.* t. 2895; *Bot. Reg.* t. 1347.

SPECIFIC CHARACTER.—Plant prostrate, branched, clothed with

glandular down. Lower leaves pinnatifid and cut. Upper ones euneated, pinnatifid. Bracteas or involucreal leaves oblong, acute, quite entire. —(*G. Don.*)

DESCRIPTION, &c.—The flowers are small, long in the tube, of a dingy purplish colour; and very few together in each head. The stem is much branched, the leaves are small, and of different shapes; and like all the species of the genus, the whole plant has an untidy and weedy appearance. It was found by A. Menzies, Esq. and afterwards by Dr. Scouler, near Fort Vancouver on the Columbia; but Douglas in 1826 discovered that it was a common plant on the hills of North America, growing in partially shaded places, and continuing in flower all the summer. It is one of the many Californian plants of which specimens were brought to England by Mr. Menzies in 1792, though the plants were not introduced till so many years afterwards. The plant is of the easiest culture, as it will grow in any soil or situation, and may be sown at any season when the ground is not hard with frost.

2.—COLLOMIA COCCINEA, *Lehm.* THE SCARLET COLLOMIA.

SYNONYMES.—*C. lateritia, D. Don.*; *C. eavanillesii, Hook et Arn.*; *Phlox linearis, Cav.*; *Phlox biflora, Ruiz et Pavon.*

ENGRAVINGS.—*Bot. Reg.* 1622; *Swt. Brit. Flow. Gard.* t. 206; *Bot. Mag.* t. 3468.

SPECIFIC CHARACTER.—Plant erect, branched, beset with glandular

down. Leaves lanceolate-linear. Upper ones ovate-lanceolate, quite entire, or deeply 2-4-toothed at the apex. Calyx semi 5-cleft, with broad-lanceolate, obtuse segments. Corolla more than twice longer than the calyx. Cells of the capsule 1-seeded.—(*G. Don.*)

DESCRIPTION, &c.—This is unquestionably the handsomest species of the genus; and it is in fact the only one worth growing as a garden flower. Even this, however, does not look well unless sown in masses; and it should only be grown where there is abundance of space, and variety is necessary. The flowers are of a bright

scarlet, but they are so small, and the bracteas or involueral leaves so large, that scarcely any effect is produced by their brilliant colour. The leaves are remarkable from their being frequently divided into three sharp segments of unequal length. The plant is a native of Chili, from which country seeds were brought by Mr. Cuming in 1832. They are now common in all the seed-shops, and may be sown in the open border in March, when they will flower in June.

3.—COLLOMIA LINEARIS, *Nutt.* THE LINEAR-LEAVED COLLOMIA.

SYNONYME.—*C. parviflora*, *Hook.*

ENGRAVINGS.—*Bot. Reg.* t. 1166; *Bot. Mag.* t. 2893.

SPECIFIC CHARACTER.—Plant erect, branched, clothed with glandular

hairs. Leaves ovate-lanceolate, quite entire, opaque, uniform, superior ones downy beneath. Calyx cup-shaped, 5-parted. Corolla more than twice longer than the calyx. Cells of capsule 1-seeded.—(*G. Don.*)

DESCRIPTION, &c.—The flowers are very small, and of a dingy purple; and they are so surrounded with the bracteas, and the dark green leaves, as to present very little beauty. This plant, which was the first described of the genus, was found by Nuttall on the banks of the Missouri river; but it was afterwards discovered in great abundance on the banks of the Columbia; and, in fact, its habitat appears to extend over a space of nearly sixteen hundred miles. It was introduced by Douglas in 1826; and it is now common everywhere. It is quite hardy, and only requires to be sown in the open border in March, to come into flower in May, and it continues flowering till July or August.

4.—COLLOMIA GRANDIFLORA, *Dougl.* THE LARGE-FLOWERED COLLOMIA.

ENGRAVINGS.—*Bot. Reg.* t. 1174; *Bot. Mag.* t. 2894.

SPECIFIC CHARACTER.—Plant erect, branched, rather downy at top. Leaves oblong-lanceolate, entire, shining, ciliated with glands. Calyx

5-cleft, villous, glandular. Corolla ventricose. Limb spreading. Cells of capsule 1-seeded.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of this species are much larger than those of any of the other kinds; but their colour when they first expand, is of a dingy yellow, becoming gradually of a nankeen or buff-colour, and they are surrounded with a glutinous substance, which renders them very unpleasant to the touch. The bracteas are also large, and the plant weedy-looking; but the stems are of a rich purple. The plant is a native of the country near the Columbia, where it was discovered and sent home by Douglas in 1826. Seeds are now common in the seed-shops, and they only require sowing in March, to flower in May and June. Care must be taken, however, to sow the seeds in a poor soil and shady situation; as in a rich soil, the plants will produce more leaves than flowers, and in a hot, dry, exposed situation, they will wither without producing any flowers at all.

5.—COLLOMIA GRACILIS, *Doug.* THE SLENDER COLLOMIA.

SYNONYME.—*Gilia gracilis*, *Hook.*

ENGRAVING.—*Bot. Mag.* t. 2924.

SPECIFIC CHARACTER.—Plant erect, branched, clothed with glandular

down. Leaves lanceolate-oblong, obtuse. Calyx 5-parted. Calycine segments long, subulate. Stamens enclosed. Cells of capsule 1-seeded.—(*G. Don.*)

DESCRIPTION, &c.—A plant with small and insignificant dingy pink flowers, and very slender and numerous branches, bearing a much greater resemblance to the genus *Gilia*, than to that of *Collomia*. It is a native of California, where it was discovered in light soils, and on high grounds near the rivers. It was introduced in 1826; but we do not know where seeds are to be obtained. It is quite hardy, and its culture is the same as that of the other species. There are some other species of *Collomia*; but they have not yet been introduced.

GENUS IV.

GILIA, *Ruiz et Pavon.* THE GILIA.*Lin. Syst.* PENTANDRIA MONOGYNIA.¹

GENERIC CHARACTER.—Calyx campanulate, 5-cleft. Corolla funnel-shaped, or sub-campanulate; segments of the limb obovate. Stamens inserted in the throat. Cells of capsule many-seeded.—(*G. Don.*)

DESCRIPTION, &c.—The species of the genus *Gilia* are nearly all annuals, with the exception of the two beautiful plants called *Gilia coronopifolia*, syn. *Ipomopsis picta*, and *G. aggregata*, syn. *I. elegans*, which are biennials, though the latter is frequently marked as an annual in botanical books and catalogues. The genus was named in honour of Philippi Salvador Gilio a Spanish botanist, and not in honour of Dr. Gillies, as is generally supposed.

1.—GILIA INCONSPICUA, *Dougl.* THE INCONSPICUOUS GILIA.

SYNONYMES.—*G. parviflora*, *Spreng.*; *Ipomopsis inconspicua*, *Smith*; the calyxes with glandular down. Leaves pinnatifid, lower ones bipinnate, segments linear. Flowers solitary, terminal, panicled. *Cantua parviflora*, *Pursh.* Corolla about twice the length of the calyx.—(*G. Don.*)
 ENGRAVING.—*Bot. Mag.* t. 2883.
 SPECIFIC CHARACTER.—Stem much branched, and clothed as well as

DESCRIPTION, &c.—A little insignificant blue flower, introduced so long ago as 1793, when it was raised at Syon House, from American seed. It was first described by Sir James Edward Smith, and sought for by Pursh; but the exact locality of its native habitat was not known till it was found by Douglas on the banks of the Columbia in 1826. It is quite hardy, and grows best in a shady situation in sandy peat. We do not know where seeds are to be procured.

2.—GILIA PUNGENS, *Doug.* THE SHARP-LEAVED GILIA.

SYNONYME.—*Ægocloa pungens*, *Benth.*; *Gilia squarrosa*, *Hook et Arm.*; *Hoitzia squarrosa*, *Esch.* clammy down. Leaves pinnate. Leaflets entire or cut, the lobes lanceolate-linear, very acute and spinose. Bractes ciliate hairy, dilated at the base. Calycine segments lanceolate, nearly entire. Corolla longer than the calyx. Stamens inclosed.—(*G. Don.*)
 ENGRAVING.—*Bot. Mag.* t. 2977.
 SPECIFIC CHARACTER.—Plant erect, much branched, clothed with

DESCRIPTION, &c.—A very curious plant of no beauty; with very small flowers, and a fetid smell. A native of California, where it was found by Douglas in moist valleys, and near the sources of the Mulhomaek river, one of the branches of the Columbia. The plant was introduced in 1833; but we do not know where seeds are now to be procured.

3.—GILIA ARENARIA, *Benth.* THE SAND-INHABITING GILIA.

SPECIFIC CHARACTER.—Stem humble, clammy, nearly naked. Leaves pinnatifid, lobes ovate. Flowers somewhat glomerate; corolla three times longer than the calyx.—(*G. Don.*)

DESCRIPTION, &c.—A very elegant little plant with a slender stem, and delicate blue flowers. A native of California, and discovered there by Douglas. It was introduced in 1833. A specimen of this species has just been sent to us (August 16th, 1839), the flowers and buds of which are remarkably elegant and delicate; and judging from which, the species seems to us well deserving of cultivation.



1. *Gilia capitata*. — 2. *Gilia capitata* var. *alba*. — 3. *Gilia*. — 4. *Gilia tricolor*. — 5. *Gilia tricolor* var. *alba*. — 6. *Gilia*.

4.—*GILIA TENUIFLORA*, *Benth.* THE SLENDER-FLOWERED *GILIA*.

ENGRAVINGS.—Bot. Reg. t. 1838 ; and our *fig.* 6, in Plate 28.

SPECIFIC CHARACTER.—Stem erect, tall, clammy, nearly naked, and panicle at top. Leaves glabrous, bipinnate. Flowers usually soli-

tary. Corymbs loose, on long peduncles. Corolla four times longer than the calyx.—(*Benth.*)

DESCRIPTION, &c.—This plant is a striking proof of the difficulty of describing a plant accurately from dried specimens, as Mr. Bentham, judging from the dried plant sent home by Douglas, called the flowers blue, while in fact they are of a beautiful pink. Dr. Lindley says, “the corolla is in reality of a rich, clear, uniform violet in the inside, and, on the outside, of a pale rose, but this colour is much affected by the presence of innumerable short deep-red lines, which are as delicate as if they were drawn with the point of a needle.”—The “flowers change in drying from rose colour to blue.” As there appears something remarkable about the colour of this flower we have transcribed Dr. Lindley’s own words, and we have only to add that the colour of a living specimen which we received August 16, from Lee’s Nursery, Hammersmith, was exactly that shown in our plate. It is a very pretty, delicate, and indeed beautiful flower, on long slender stalks, growing about two feet high and much branched. It was found by Douglas in California, and seeds were sent home by him in 1833, to the Horticultural Society’s Garden at Chiswick, but only one plant was raised. It ripened, however, abundance of seeds, and is now grown as we have before observed at Lee’s, and probably in some other nurseries. Seeds may be had also at Charlwood’s. Douglas sent it home under the name of *Gilia splendens*, but we believe that name has never been adopted in England. The culture is the same as that of all the Californian annuals, see p. 156.

5.—*GILIA TRICOLOR* *Benth.* THE THREE-COLOURED *GILIA*.

ENGRAVINGS.—Hort. Trans. N. S. 1, t. 18, *fig.* 3 ; Bot. Reg. t. 1704 ; Swt. Brit. Flow. Gard. N. S. t. 264 ; Bot. Mag. t. 3463 ; Paxt. Mag. of Bot. vol. i. p. 150 ; Bot. Gard. vol. vi. No. 509 ; and our *fig.* 4, in Plate 28.

VARIETIES.—G. t. 2 alba, our *fig.* 5, in Plate 28 ; syn. G. bicolor ; G. t. 2 fl. albicantibus, *D. Don*.

SPECIFIC CHARACTER.—Stem erect, glabrous, leafy. Leaves bipinnate ; leaflets or segments linear-subulate. Corymbs 3 to 6-flowered, virgately panicle. Corolla about three times longer than the calyx.—(*Benth.*)

DESCRIPTION, &c.—This very pretty little annual is now so common in every garden, that it is not necessary to give any particular account of it, and the number of times that it has been figured during the six years that have passed since its introduction, shows the value that has been set upon it as an ornamental plant. It was found by Douglas in California, in 1833, and seeds were sent by him in that year to the Horticultural Society’s Garden. The plant is of the easiest culture, and, if left to itself, will come up like a weed. It succeeds admirably, treated as we have recommended for the *Leptosiphons*, see p. 156 ; and by successive sowings in February, April, June, and August, beds of it may be kept in full flower the whole summer. Even if merely sown in February, and left to sow its own seeds as soon as they are ripe, it will produce a second crop the same year. Seeds may be procured in any seed-shop, and they are generally so thoroughly well ripened, that all that are sown will vegetate. *Gilia tricolor* has a brilliant effect when sown to form a bed by itself, but it also looks very well sown with mignonette in the way directed for the *Clarkias*, see p. 57. The variety only differs in having no lilae in the flowers ; and as neither of the kinds grow above a foot high, they look very well sown together. Care should, however, be taken not to sow the seeds too thickly ; as they look better when allowed to spread, than when drawn up.

6.—*GILIA ACHILLEÆFOLIA*, *Benth.* THE MILFOIL-LEAVED *GILIA*.

ENGRAVINGS.—Bot. Reg. t. 1682; Bot. Mag. t. 3440; Swt. Brit. Flow. Gard. N.S. t. 280; Paxt. Mag. of Bot. 1, p. 150; and our *fig.* 3, in Plate 28.

SPECIFIC CHARACTER.—Stem erect, smoothish. Leaves twice or thrice pinnate; segments or leaflets linear-subulate. Corymbs capitata, many-flowered, on very long peduncles. Calyxes rather woolly. Corollas twice as long as the calyx. Stamens shorter than the corolla.—(*Benth.*) Flowers purple.

DESCRIPTION, &c.—A pretty species of *Gilia*, not quite so well known as *G. tricolor*, but still tolerably common in gardens. It has smooth pale-green leaves, and a branching stem, seldom growing above a foot high; and its flowers, though not so pretty as those of *G. tricolor*, are valuable from the long time they last. It is a native of California, whence its seeds were sent home by Douglas with those of *G. tricolor*. Its culture is the same as that of the other Californian annuals, and its seeds may be procured in every seed-shop.

7.—*GILIA CAPITATA*, *Doug.* THE CLUSTERED-FLOWERED *GILIA*.

ENGRAVINGS.—Bot. Mag. t. 2698; Bot. Reg. t. 1170; Swt. Brit. Flow. Gard. t. 287; Bot. Gard. t. 202; and our *fig.* 1, in Plate 28.

VARIETIES.—*G. c.* 2, *alba*, *Hort.*, our *fig.* 2, in Plate 28. Flowers white.

DESCRIPTION, &c.—This species is very inferior in beauty to the other kinds. It has long slender stems three feet or four feet high, and the flowers, which are small, are produced in clusters. It was the first species of *Gilia*, introduced from California, having been sent home by Douglas in 1826. It only looks well in a large garden, where it should be in masses. A bed of it of considerable size has a very good effect, but a single plant has a very untidy, straggling appearance. The white variety merely differs in colour from the species. Seeds are common in all the seed-shops, and they should be sown in the open border in March or April.

OTHER SPECIES OF *GILIA*.

These are nearly all marked as having been introduced; but we have never seen them in flower, and we do not know where seeds of them are to be procured.

G. LINIFOLIA, *Benth.*

This species has large white flowers and palmate leaves. It was found in California by Douglas, and seeds of it sent home in 1833.

G. PHARNACEOIDES, *Benth.*

Only differing from the preceding in the flowers being about half the size. It was discovered in the same country, and sent home at the same time.

G. PUSILLA, *Benth.*

Only differing in the flowers being still smaller than the last, and in the plant being prostrate. Found in Chili, by Dr. Bertero, and introduced in 1832.

G. SESSEI, *G. Don*; syn. *G. PINNATIFIDA*, *Sesse et Mocino*.

Stem dwarf, and much branched; leaves pinnatifid. Flowers produced in fascicles; corolla with a filiform tube, and bractees long. A native of Mexico, not introduced.

G. LONGIFLORA, *G. Don* ; syn. *CANTUA LONGIFLORA*, *Torrey*.

Plant quite smooth ; leaves finely pinnatifid. Stem much branched, paniced at top ; flowers in loose corymbs ; corolla salver-shaped, with a very long tube. A very remarkable species, having very much the appearance of a Phlox. A native of the Canadian river, not yet introduced.

G. CRASSIFOLIA, *Benth.*

Leaves pinnatifid and woolly, flowers rather small and yellowish. The plant, which grows nearly two feet high, is a native of Chili, and was introduced in 1832.

G. LACINIATA, *Ruiz et Pavon* ; syn. *CANTUA BREVIFLORA*, *Juss.* ; *THONNIA MULTIFIDA*, *Domb.*

Flowers purplish, and jagged at the edges ; leaves also much cut and pinnatifid. A native of Chili and Peru, but found also in California. Introduced in 1831.

G. MULTICAULIS, *Benth.*

Flowers blue, on very long peduncles ; leaves bipinnate. A native of California, sent home by Douglas in 1833.

CHAPTER XXIX.

LOBELIACEÆ.

ESSENTIAL CHARACTER.—Calyx superior, 5-toothed, or 5-parted. | like fringe. Fruit capsular or baccate ; 1—2-celled ; many-seeded.
Corolla monopetalous, irregular, inserted in the calyx. Limb 5-lobed, | Albumen fleshy. Milky herbs. Leaves alternate, exstipulate. Flowers
or 5-cleft. Stamens 5, perigynous. Anthers combined. Ovarium | axillary, and terminal.—(*G. Don.*)
usually 2-celled. Stigma usually 2-lobed, surrounded by a cup-

DESCRIPTION, &c.—Nearly all the plants belonging to this order are remarkable for the beauty of their flowers, which are of the most splendid colours ; but they are all dangerous in their qualities, on account of an acrid milk, in which they abound. The order consists of many genera ; only a few of which contain annual plants.

GENUS I.

LOBELIA, *Pohl*. THE LOBELIA.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Limb of the calyx 5-parted. Corolla with | bilabiate limb. Anthers cohering ; two lower ones usually bearded.
the tube cleft on the upper side, and thickened at the base, with a | Capsule 2-celled, 2-valved, dehiscent at the apex.—(*G. Don.*)

DESCRIPTION, &c.—The genus *Lobelia* formerly included a great many flowers very dissimilar to each other ; but it is now divided into several genera, nearly all the annual species, however, being still included in the true *Lobelias*. The name is taken from L'Obel, a Flemish botanist, who was appointed botanist of James I. ; and it is interesting as being one of the first names bestowed in compliment to a living person. Pohl, who named the genus *Lobelia*, was indeed the first in modern times who introduced the practice, now so common, of complimenting individuals by naming plants after them with which they had no connexion.

1.—LOBELIA GRACILIS, *Andr.* THE SLENDER LOBELIA.

ENGRAVINGS.—Bot. Rep. t. 340; Bot. Mag. t. 741; and our *fig.* 5, in Plate 29.

VARIETY.—*L. g.* 2, *roscæ*, our *fig.* 6, in Plate 29.

SPECIFIC CHARACTER.—Plant glabrous, erect, branched a little.

Racemes rather secund. Calyx length of filaments; superior lip of the corolla densely bearded; middle segment of the lip almost square, broader than long; lower leaves nearly ovate, deeply pinnatifid; superior ones linear-lanceolate, nearly entire.—(*G. Don.*)

DESCRIPTION, &c.—A beautiful little plant, not growing more than six inches high, and flowering profusely. The species and variety are grown as edging plants in Forrest's Kensington nursery, and they produce a very good effect. The usual mode of planting them is, however, in a bed by themselves, so as to form a mass. This species was introduced in 1801, by George Hibbert, Esq., who raised it at Clapton, from seeds sent home by his collector, from the Cape of Good Hope. The seeds, which are now common in the seed-shops, should be sown in the open border in April or May, or they may be raised on a hot-bed, and planted out in May. They require a light rich soil, and succeed best in a warm sheltered situation.

2.—LOBELIA HYPOCRATERIFORMIS, *R. Brown.* THE SALVER-FLOWERED LOBELIA.

ENGRAVINGS.—Bot. Mag. t. 3075, and our *fig.* 3, in Plate 29.

SYNONYME.—*Isotoma Brownii*.—(*G. Don.*)

SPECIFIC CHARACTER.—Glabrous. Stems almost simple. Leaves

linear, quite entire. Corolla salver-shaped, with an entire tube, and a somewhat unequal limb. Flowers racemose.—(*G. Don.*)

DESCRIPTION, &c.—This very beautiful species has been placed by Mr. G. Don in the genus *Isotoma*; and it does indeed appear rather to belong to that genus, than to the genus *Lobelia*. It is very handsome, and well deserves to be in general cultivation, but it is only rarely to be met with. It is a native of the south coast of New Holland; and it thrives best in a light rich soil.

3.—LOBELIA RAMOSA, *Benth.* THE BRANCHING LOBELIA.

ENGRAVINGS.—Botanist, No. 93; and our *fig.* 4, in Plate 29.

SYNONYME.—*L. celestina*, *Hort.*

SPECIFIC CHARACTER.—Stem branched, nearly round, pubescent, lower leaves pinnatifidly cut into segments; upper leaves linear-lanceo-

late, slightly toothed. Peduncle-like branches bearing one flower each. Corolla eut, with the middle of lower lip very broad, and slightly emarginate, smaller at the sides. Anthers all bearded. Capsule oblique.—(*Benth.*)

DESCRIPTION, &c.—This very beautiful flower is remarkable for its brilliant colour; and for the great length of time that it will continue in flower after it is cut. It grows two or three feet high, and continues in flower several months. It is a true annual, though it will last through the winter if preserved with care; and it succeeds perfectly well if treated like *Lobelia gracilis*. It is a native of the Swan River, and was introduced in 1837. Seeds are not yet common in the seed-shops; but they may be had by members of the Horticultural Society from their garden at Chiswick, and from Mr. Lowe of Clapton, and some other nurserymen.

OTHER SPECIES OF LOBELIA.

The following species are all annuals, and nearly all well deserving of cultivation, but we do not know where seeds of them are to be obtained.

L. CAMPORUM, *Pohl.*

A dwarf plant, with blue flowers, a native of dry fields in the Brazils.

L. MOLLIS, *Graham*.

Leaves eight lines long, and six lines broad. Calycine segment equal in length to the tube of the corolla, which is purplish, with the tube cleft along the upper side. Anthers purplish, having two short white awns projecting from their lower edge. Stigma almost simple, bearded, (*G. Don*). This very distinct species is a native of St. Domingo, where it was collected by Dr. Krauss. It was introduced into England in 1828.

L. INFLATA, *Lin.* Swt. Brit. Flow. Gard. t. 99; syn. RAPUNTIIUM INFLATUM, *Mill*.

A dwarf species with small pale-blue flowers; a native of North America, from Virginia to Canada, introduced in 1759.

L. CHINENSIS, *Lam*.

A creeping plant, with pale-blue flowers, on long footstalks; a native of China, near Canton.

L. EXCELSA, *Wall*.

A magnificent plant; growing ten or twelve feet high; with large flowers, and leaves nearly a foot long. A native of Nepaul, not yet introduced.

L. ROSEA, *Wall*.

A plant from four to six feet high, with numerous rose-coloured flowers. A native of Nepaul.

L. DEBILIS, *Lin., jun.*

A little feeble plant, scarcely six inches high, with blue flowers. A native of the Cape of Good Hope, introduced in 1774; and described by the younger Linnæus.

L. CAMPANULATA, *Lam*.

A dwarf plant, with blue, upright, bell-shaped flowers. Introduced from the Cape of Good Hope, in 1821.

L. ANCEPS, *Thun*.

A low plant with winged stems, and blue flowers. Introduced from the Cape of Good Hope in 1818.

L. URENS, *Lin*.

The flowers are purplish and not showy; and the whole plant, if chewed, will be perceived to abound in a milky juice which excites an unpleasant sense of burning on the tongue. It is a native of England, in Devonshire, and it is also found in France and Spain.

L. SERRULATA, *Brot*.

A native of Gibraltar in sandy humid places; closely resembling *L. urens*; introduced in 1820.

L. TENELLA, *Biv.*; syn. L. SETACEA, *Smith*; L. LAURENTIA, *Brot.*; L. MINUTA, *Dec*.

A prostrate plant, with the flowers greatly resembling those of *Clintonia pulchella*; a native of Portugal, introduced in 1821.

GENUS II.

ISOTOMA, *Lindl.* THE ISOTOMA.

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*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Limb of calyx 5-parted. Corolla salver-shaped, or funnel-shaped, with an entire or cleft tube, and a 5-parted nearly regular limb. Filaments combined; anthers cohering, beard- less; the two lower ones mucronate. Stigma capitate, protruding. Capsule 2-celled, many-seeded, dehiscent.—(*G. Don.*)

DESCRIPTION, &c.—The name *Isotoma* signifies in equal sections; and it is given to this genus, from the segments of the corolla being nearly equal.

ISOTOMA AXILLARIS, *Lindl.* THE AXIL-FLOWERED ISOTOMA.

ENGRAVINGS.—Bot. Reg. t. 964; and our *fig. 2*, in Plate 29.

SYNONYMES.—*Lobelia senecioides*, *Cunn.*; *L. senecioides*, *Spreng.*

SPECIFIC CHARACTER.—Plant rather downy; leaves sessile, pinna-

tifid, toothed; peduncles axillary, naked, elongated, 1-flowered; corolla salver-shaped, with an entire tube.—(*G. Don.*)

DESCRIPTION, &c.—One of the most elegant of border flowers. We have seldom been so much delighted with any flower as we were with this, when we saw it for the first time in the nursery of Mr. Henderson, Pine Apple Place, Maida Hill. It is a native of the south coast of New Holland, whence it was introduced in 1824; but being supposed to be rather tender, and a perennial, it is only lately that it has come into general cultivation as a border annual. The seeds are now common in the seed-shops, and the plants do best raised on a hotbed in February or March, and planted out in May. If sown in the open border, it should not be till April or May; in which case the plants will not flower till August or September.

## GENUS III.

MENOPSIS, *Salis.* THE MENOPSIS.

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Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx tubular, 5-cleft. Corolla salver-shaped, with a terete tube, which is cleft on one side, allowing the stamens to escape, and a regular rotate limb. Anthers cohering. Capsule 2-celled, many-seeded, dehiscent.—(*G. Don.*)

MENOPSIS CONSPICUA, *Salis.* THE CONSPICUOUS MENOPSIS.

ENGRAVINGS.—Bot. Rep. t. 664; Bot. Mag. t. 1499.

SYNONYMES.—*Lobelia speculum*, *Andrews*; *Specularia*, *Solander*.

DESCRIPTION, &c.—This very curious little plant has been separated from the genus *Lobelia* on account of the regularity of its corolla, which in shape is more like a very small *Convolvulus* than a *Lobelia*. It is a prostrate plant, with very rich dark blue flowers, having yellow anthers on very long naked footstalks. It is a native of the Cape of Good Hope, whence it was introduced in 1812. It is not easy to say where seeds can be procured; but if they should be obtained, they should be sown on a hotbed in pots filled with peat and sand, and when planted out in May, holes should be made in the border and filled with peat earth, into which they should be transplanted.



1. *Clintonia pulchella*. — 2. *Isotoma axillaris*. — 3. *Lobelia hypocrateriformis*.
 4. *Lobelia ramosa*. — 5. *Lobelia gracilis*. — 6. *Lobelia gracilis* var. *rosea*.

D. L. Haydn Lith. to the Queen.

GENUS IV.

CLINTONIA, *Douglas*. THE CLINTONIA.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Limb of calyx 5-cleft. Corolla bilabiate, with hardly any tube. Anthers cohering; the two superior ones bearded. Capsule silique-formed, triangular, dehiscent by three loriform valves, many-seeded. Seeds attached to two parietal placentas.—(*G. Don.*)

DESCRIPTION, &c.—Beautiful little plants, found by Douglas in North America, and named by him “in honour of the late De Witt Clinton, governor of the state of New York, and author of several ingenious treatises on different branches of natural history.”

1.—CLINTONIA ELEGANS, *Doug.* THE ELEGANT CLINTONIA.

ENGRAVINGS.—Bot. Reg. t. 1241.

SPECIFIC CHARACTER.—Glabrous, stem procumbent, branched, rather

angular; leaves sessile, ovate, 3-veined; flowers solitary, axillary, sessile; ovary sessile, long, acuminate.—(*G. Don.*)

DESCRIPTION, &c.—When this plant was first found it was thought very beautiful, and Dr. Lindley described it as looking, when sown in masses, like “a carpet of silver and blue.” It is now, however, so completely outshone by *C. pulchella*, that it is rarely to be met with. There is, nevertheless, considerable general resemblance between the two species. *C. elegans* was found by Douglas near the Columbia river, and seeds of it were sent home in 1827, but they are not now to be procured in the seed-shops.

2.—CLINTONIA PULCHELLA, *Lindl.* THE PRETTY CLINTONIA.

ENGRAVINGS.—Bot. Reg. t. 1909; Swt. Brit. Flow. Gard. 2nd ser. t. 412; and our *fig.* 1, in Plate 29.

SPECIFIC CHARACTER.—Leaves and sepals obtuse, upper lip of the

corolla divided into two ovate, acute, spreading segments; lower lip tripartite, and broad across the centre.

DESCRIPTION, &c.—It is perhaps scarcely possible to imagine a more brilliant little flower than this, or one more ornamental for filling a bed, or a vase, or basket. It is also remarkable for the length of time that it continues not only in flower, but in full beauty. Two vases filled with it in our garden at Bayswater have this year (1839) remained in full splendour since the month of May, till now, September 4; notwithstanding the heavy rains, violent winds, and other unfavourable circumstances, which have tarnished the beauty of nearly all the other flowers in the garden. The plants appear still in a vigorous state, and they are ripening a few seeds, which are contained in long capsules, that appear at first sight to be the footstalks of the flowers. These curious capsules, when ripe, open on the sides, and show a number of very small seeds like dust. This beautiful little flower was discovered by Douglas in California in 1832, and seeds of it were sent home by him the same year to the London Hort. Soc. At first the seeds ripened so sparingly that it was feared the species would soon be lost; but a better method of treating it was soon discovered; and in 1838, so great a quantity of it was grown for seed in Forrest's nursery, Kensington, and other places, that it is now common in nearly all the seed-shops. The species being quite hardy, the seeds may be sown in the open border with the other annual flowers; but it does best sown in a hotbed in March, and planted out in May. As it has a procumbent stem, and branches very

much, a few plants will be sufficient to cover a small bed, or to fill a vase or basket. It is better suited for the latter purposes, or for rockwork, than for growing in the open border; as from the lowness of its stature the full beauty of its flowers cannot be so well perceived on the ground as when they are on a level with the eye, or hanging gracefully over the edge of a basket or vase. In every situation, however, it is highly valuable.

CHAPTER XXX.

CAMPANULACEÆ.

ESSENTIAL CHARACTER.—Calyx usually 5-lobed. Corolla monopetalous, regular, usually 5-lobed, with a valvate æstivation. Stamens usually 5, inserted along with the corolla on the disc of the ovary, and combined with it, but free from the corolla. Anthers contiguous, free, rarely combined. Stigma usually divided, with recurved lobes, Fruit superior, usually 5-celled, many-seeded, opening at the sides or apex. Albumen fleshy. Milky herbs. Leaves alternate, rarely opposite; inflorescence variable. Flowers usually drooping.—(*G. Don.*)

DESCRIPTION, &c.—The genus *Campanula* of Linnæus, which gives its name to this order, used formerly to comprise nearly all the annual species; and though it has been divided by modern botanists into several genera, we shall still describe the plants it contains by their old names, as being those they are most generally known by, giving the new ones among the synonyms. We shall, however, here say a few words on these new genera, and shall mention some of the reasons why they have been divided from the old genus. The word *campanula*, which signifies a little bell, refers to the shape of the flowers of the plants which are still retained in the original genus; while those with expanded corollas which shine in the sun, like the Venus's Looking Glass, are placed in a new genus called *Specularia*, from *speculum*, a mirror. Others that have long, prismatically-formed fruit, and erect flowers, like *C. Prismaticarpus*, are called *Prismaticarpus*; and others with beautiful star-like flowers like *C. gracilis*, and *C. capensis*, are now called *Wahlenbergia*. There are several others, the differences between which are not so easily perceptible, making in all thirteen new genera, besides the old genus *Campanula*.

GENUS I.

CAMPANULA, *Fuchs*. THE CAMPANULA, OR BELL-FLOWER.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Corolla campanulate, funnel-shaped, or broadly tubular. Nectarium none. Capsule 3—5-celled, not elongated. Cells when five, opposite the stamens and calycine segments. Herbs variable in habit.—(*G. Don.*)

DESCRIPTION, &c.—Many of the most ornamental species of this genus are biennial, or perennial. The annual flowers are all quite hardy, and of the easiest culture. Their flowers, though handsome, have, however, a degree of sameness in their appearance, as they are nearly all dark blue or purple, with some few varieties white.

1.—CAMPANULA LOREYI, *Pohl*. LOREY'S CAMPANULA.

ENGRAVINGS.—Bot. Mag. t. 2581; Swt. Brit. Flow. Gard. 2nd Ser. t. 332; and our *fig. 5*, in Plate 30.

SYNONYMS.—*C. Baldensis*, *Balb.*; *C. ramosissima*, *Hort.*

VARIETY.—*C. L. 2 alba*; and our *fig. 5*, in Plate 30.

SPECIFIC CHARACTER.—Stem branched, few-flowered. Leaves

sessile, glabrous; lower ones obovate, crenated; middle ones ovate-lanceolate: superior ones linear, entire. Calyx with a hispid tube, and long-acuminated, glabrous, spreading lobes, which are denticulated at the base, length of corolla, which is somewhat rotate. Capsule spheroid, deeply furrowed, and beset with strigose pili.—(*G. Don.*)

DESCRIPTION, &c.—This very pretty species was named by the Italian botanist Pollini, in compliment to



1. *Campanula pentagonia*. — 2. *Campanula dichotoma*. — 3. *Campanula divergens*.
4. *Campanula speculum*. 5. *Campanula Loregi*.

Day & Haghe Lith. to the Queen.

Dr. Lorey, who discovered it on Mount Baldo in the Veronese. It has since been found in several different parts of Italy, and was introduced in England about 1824. In the nurseries and seed-shops, it is generally called the new Venus's Looking Glass. It is quite hardy, and of the easiest culture; the seeds only requiring to be scattered on the border, and very slightly covered, to come up abundantly. The plants in dry weather require to be frequently noticed, as the roots are very slender, and are apt to wither up if not supplied with sufficient moisture. This species may be grown either singly in masses, or as an edging plant; for which last purpose it is very suitable, as nearly all the seeds will vegetate.

2.—CAMPANULA DIVERGENS, Willd. THE SPREADING BELL-FLOWER.

SYNONYMES.—*C. spatulata*, *Waldst et Kit.*; *C. nutans*, *Vahl*; *C. cernua*, *Balb.*; *C. pulcherrima*, *Hort.*

ENGRAVINGS.—Swt. Brit. Flow. Gard., 2nd Ser., t. 256; and our fig. 3, in Plate 30.

SPECIFIC CHARACTER.—Plant pilose. Stem panicled; radical

leaves subspatulate, crenulated, narrowed at the base. Cauline leaves sessile, lanceolate, acuminate. Peduncles many-flowered, diverging. Lobes of calyx bristly, long-acuminate, four times shorter than the corolla; appendages of the sinuses ovate, obtuse, one half shorter than the lobes.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of this very handsome species are erect in the bud, but drooping in their expanded state. Many are quite smooth, and of a beautifully clear bright purple. The general appearance of the plant greatly resembles that of the common biennial species, *Campanula media*, usually called the Canterbury Bell. *C. divergens* is a native of Hungary and Transylvania, and it has been also found in Siberia. It was introduced in 1814; but it is not common in the seed-shops and nurseries. It is frequently considered a biennial, but if the seeds are sown very early in the season, say in February or March, in a light gravelly or chalky soil, or brought forward in a hotbed and planted out in April or May, the plants will flower early in June. Even if sown in the open border in April or May, they will generally flower the following August or September. The plants while growing should be well supplied with water; and if this be attended to, and the soil be such as to allow the free passage of the slender fibrous roots, the plants will grow with great luxuriance; and instances have been known of as many as fifty flowers having been produced from a single root.

3.—CAMPANULA SPECULUM, Lin. VENUS'S LOOKING-GLASS.

SYNONYMES.—*Specularia Speculum*, *Alph. Dec.*; *Prismatocarpus speculum*, *L'Herit.*; *Campanula pulchella*, *Salisb.*; *C. cordata*, *Visioni.*

ENGRAVINGS.—Bot. Mag. t. 102; and our fig. 4, in Plate 30.

VARIETY.—*C. s. 2, alba.* Flowers white.

SPECIFIC CHARACTER.—Stem branched. Branches 3-flowered. Calyx glabrous or downy, with a prismatic tube, which is narrow at the apex, and linear-lanceolate spreading lobes, which are at length reflexed. Corolla length of the lobes of the calyx.—(*G. Don.*)

DESCRIPTION, &c.—No description appears necessary of this well-known flower, which has been grown in our gardens since the time of Gerard, 1596. It is a native of the south of Europe, and is of the easiest culture. If allowed to sow itself, it will flower nearly all the year without trouble; or it may be sown with the other annuals in spring.

4.—CAMPANULA PENTAGONIA, Lin. THE LARGE-FLOWERED VENUS'S LOOKING-GLASS, OR FIVE-ANGLED BELL-FLOWER.

SYNONYMES.—*Prismatocarpus pentagonius*, *L'Herit.*; *Specularia pentagonia*, *Alph. Dec.*

ENGRAVINGS.—Bot. Reg. t. 56; and our fig. 1, in Plate 30.

SPECIFIC CHARACTER.—Stem branched, large. Flowers terminal,

solitary. Calyx beset with a few stiff hairs, having a long prismatic tube, and long, linear-lanceolate, spreading lobes. Corolla the length of the calycine lobes.—(*G. Don.*)

DESCRIPTION, &c.—This species is frequently called, in the nurseries and seed-shops, the large flowered Venus's

Looking Glass; and indeed it very much resembles *C. speculum*. The bud is curiously shaped, and distinctly 5-cornered, but when the flower expands, it is large, regularly-formed, and handsome. *C. pentagonia* is a native of the Levant about Aleppo, and also of Greece. It was first cultivated in England by Ray, in 1686. It is quite hardy, and the seeds, which may be procured in any seed-shop, only require sowing in the open border. It has a very good effect sown in masses, or patches; or it may be trained, by tying the stems to a slight wooden frame.

5.—CAMPANULA DICHOTOMA, *Lin.* THE FORKED-BRANCHED BELL-FLOWER.

SYNONYMES.—*C. mollis* var., *Willd.*; *C. Afra*, *Cav.*; *C. decipiens*, *Ram. et Schultes*.

ENGRAVINGS.—*Swt. Brit. Flow. Gard. t. 280*; and our *fig. 2*, in Plate 30.

SPECIFIC CHARACTER—Plant clothed with stiff hairs. Stem erect

with dichotomous branches. Cauline leaves ovate, acute, a little crenated. Flowers sessile in the forks of the branches. Calycine lobes long, subulate, one-half shorter than the corolla. Appendages of the sinuses of the calyx subulate, one half shorter than the lobes.—(*G. Don.*)

DESCRIPTION, &c.—A rather curious plant, with an angular stem from six inches to a foot high, much branched; and the branches angular, spreading, hairy, and forked at the ends, which terminate in flowers. The flowers are dark blue; and, springing from the forks of the branches, they have a very singular appearance. This species, which is a native of the shores of the Mediterranean, was introduced about 1820. The seeds, which may be procured at Charlwood's, and other seed-shops, should be sown in the open border in light rich soil, in March or April; and the plants if too thick may be transplanted in May. They will not need any other care; but if it be thought advisable, they may be trained by tying the branches to a light wooden frame, so as to display the flowers.

OTHER SPECIES OF CAMPANULA.

The following species are marked as annuals in Don's *Miller*, but we do not know where seeds of them are to be procured.

C. LINGULATA, *Waldst et Kit.*

Root branched. Stems many from the same root. Leaves tongue-shaped. Flowers in dense terminal heaps. A native of Hungary; introduced in 1804.

C. DRABÆFOLIA, *Sibth. et Smith.*

The flowers are white, tipped with blue or violet-colour. The plant is of very low growth; it is a native of Greece, and was introduced in 1823.

C. HERMINII, *Hoff.*

A native of Portugal; introduced in 1823. The root is rather thick; the stem is upright and panicled at top; and the flowers are pale blue.

C. RAMOSISSIMA, *Sibth. et Smith.*

Very nearly allied to *C. Loreyi*. A native of Greece; introduced in 1820.

C. LOEFLINGII, *Brot.*

Flowers solitary, terminating the naked branchlets, loosely panicled, drooping. Corolla funnel-shaped, blue or violaceous, with a deeper coloured zone beneath the middle, white at the base, both inside and outside. A native of Portugal, in sandy places; introduced in 1818.

C. FALCATA, *Ræm. et Schultes*; syn. *PRISMATOCARPUS FALCATUS*, *Tenore*; *SPECULARIA FALCATA*, *Alph. Dec.*

The flowers, which are rose-coloured, grow so close to the stem, and are so intermingled with the leaves, as to form a kind of leafy spike. The lobes of the calyx are sickle-shaped. A native of the shores of the Mediterranean; introduced in 1820.

C. HYBRIDA, *Lin.*; *P. HYBRIDUS*, *L'Herit.*; *S. HYBRIDA*, *Alph. Dec.*

A native of Britain, with small pinkish flowers.

C. PERFOLIATA, *Michaux*; syn. *C. BIFLORA*, *Ruiz et Pavon*; *C. FLAGELLARIS*, *H. B. et Kunth*; *C. ANGULATA*, *Rafin*; *SPECULARIA PERFOLIATA*, *Alph. Dec.*

Flowers sessile, rising from the axils of the leaves, solitary, or 2—3 together, and longer than the leaves. Corolla blue, always longer than the calycine lobes. A native of North America; introduced in 1680.

C. DEHISCENS, *Roxb.*; syn. *WAHLENBERGIA DEHISCENS*, *Alph. Dec.*

A Nepaul species, with small white flowers; introduced in 1818. There are several other species natives of Nepaul.

C. CAPENSIS, *Lin.*; *Bot. Mag.* 732; syn. *C. ELONGATA*, *Willd.*; *ROELLA DECURRENS*, *And. Bot. Rep.* t. 238; *WAHLENBERGIA CAPENSIS*, *Alph. Dec.*; *W. ELONGATA*, *Schrad.*

Flowers dark purple, and produced on very long footstalks. Plant from one foot to two feet high. A native of the Cape of Good Hope; introduced in 1803.

C. CERNUA, *Thun.*; syn. *WAHLENBERGIA CERNUA*, *Alph. Dec.*

Stem very leafy at the base. Peduncles erect, elongated, terminating in numerous 1-flowered filiform pedicels. Corolla funnel-shaped, with a white base, and blue lobes, drooping in the bud state. A native of the Cape of Good Hope; introduced in 1804.

C. LOBELIOIDES, *Lin. &c., &c.*

This species has very pale red flowers. It is a native of Madeira, and was introduced in 1777. It has many synonyms.

CHAPTER XXXI.

AMARANTHACEÆ.

ESSENTIAL CHARACTER.—Perianth 3—5-parted, persistent, usually bibracteate. Stamens 3—5, distinct or joined, usually having alternate, filiform, processes between. Ovary free, 1-celled; ovules solitary or numerous; stigma simple or compound. Fruit an utricle. Albumen farinaceous; embryo curved. Leaves alternate or opposite; exstipulate. Flowers in heads or spikes.—(*G. Don.*)

DESCRIPTION, &c.—The genera comprised in this order which contain ornamental annuals are *Amarantus*, *Celosia*, and *Gomphrena*; plants differing so widely from each other that it is difficult for any one but a botanist to imagine any relationship between them. Some of these being seldom planted in the open ground, we shall not give their botanical details. According to Dr. Lindley's arrangement, the orders *Amaranthaceæ*, *Chenopodiaceæ*, and *Polygonaceæ* should have preceded *Nyctaginaceæ*.

GENUS I.

AMARANTUS, *Lin.* THE AMARANTH.*Lin. Syst.* MONECIA PENTANDRIA.

GENERIC CHARACTER.—Calyx 3—5 sepals; corolla wanting. Male stamens 3—5. Female styles 3; capsule 1-celled, and opening horizontally. Seed 1.—(*Lin.*)

DESCRIPTION, &c.—The flowers of plants belonging to this genus are remarkable for their small size, and the brilliant effect which, notwithstanding this, they produce, from the great numbers of them that are clustered together. What we call a flower of Love-lies-bleeding, for example, is in reality a spike containing thousands of flowers, some male and some female, none of which have any corolla, but which produce their effect by their coloured sepals and bractea, the texture of which is so dry and thin, that the flowers, even after they are gathered, are a long time before they decay. This quality has procured the genus the name of *Amarantus*, which is derived from two Greek words signifying *never-withering*. The Amaranth of the poets (*Gomphrena globosa*) is however now removed to another genus. The leaves of all the species of *Amarantus* are wholesome food, and several of them are eaten in their native countries like spinach.

1.—AMARANTUS CAUDATUS, *Lin.* LOVE-LIES-BLEEDING.

SPECIFIC CHARACTER.—Racemes compound, terminating, pendulous.

DESCRIPTION, &c.—This species is easily distinguished from all the others belonging to the genus by its long, pendulous racemes of deep crimson flowers; the racemes having been frequently found to measure from two feet to three feet long. The plant is a native of the East Indies, but it appears to have been in cultivation in this country since the time of Elizabeth, as Gerard tells us that he received the seed of it from Lord Edward Zouch, and grew it in his garden. It was called Branched Flower Gentle, and Fleur-d'amour, a name that was afterwards corrupted into Floramore. In France it was called Discipline-des-religieuses, and Queue-de-renard. The seeds, which are small, black, and shining, may be had in any seed-shop; and though formerly it was considered necessary to sow them on a hotbed, it is now found that they will succeed perfectly well if treated like those of *Flos Adonis* (see p. 5). When the plants come up they will require thinning, and frequent waterings in dry weather. The situation where the seeds are sown should be dry, warm, and open; and the soil should be very rich, if it is wished to grow the plants to a large size. The plant called the Tree Amaranth is considered by Miller to be a variety of this species.

2.—AMARANTUS HYPOCHONDRIACUS, *Lin.* PRINCE'S-FEATHER.

SPECIFIC CHARACTER.—Racemes compound, crowded, erect; leaves oblong-lanceolate, mucronate.—(*Lin.*)

DESCRIPTION, &c.—The Prince's-feather differs from Love-lies-bleeding chiefly in its spikes of dark crimson flowers being much smaller and more upright. It is also much hardier, and when allowed to sow itself, it comes up in such abundance as to be quite a weed. It is a native of Virginia, and was introduced in 1739. There is a variety with green flowers, and another lately raised in Belgium which is much more branched than the common kind. The name of *hypochondriacus*, which signifies melancholy, is supposed to allude to the dull reddish-green of the leaves, and to their dark dingy purple veins, which certainly give the plant a very gloomy appearance.

OTHER SPECIES OF AMARANTUS.

A. TRICOLOR, *Lin.*

This species takes its name from the brilliant colours of its leaves when kept in a hothouse, though they lose their brilliancy when the plant is grown in the open air. Some of these leaves are blue tipped with red, others red tipped with yellow, and others red, green, and violet. When a plant of this species is well grown, it assumes the shape of a pyramid, and is very handsome. It is a native of Ceylon and other parts of the East Indies, and was introduced before 1596.

A. SPECIOSUS, *Sims, Bot. Mag. t. 2227.*

This is a very showy species; the stem is erect, and much branched; the flowers are of a bright dark crimson, and disposed on small lateral racemes, growing almost in whorls round the main one, in such a manner as to give them a very graceful and feathery appearance, and the leaves are dark purple above and red beneath. This very handsome plant was raised from seeds received from Nepaul in 1820, by Sir George Staunton, at that gentleman's beautiful seat, Leigh Park, near Havant; but it is not likely to become a general favourite, from the great heat required to bring it to perfection.

A. BLITUM, *Lin., Eng. Bot. 2212.*

This is a common British weed, which we only name here to prevent it from being confounded (as it often is) with the Strawberry blite.

GENUS II.

CELOSIA, *Lin.* THE COCKSCOMB.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Number of bracts uncertain, rough, acuminate, set under the flower. Calyx of five leaves, rough. Stamens one shorter than the rest; filaments broadest at the base. Stigma 3-cleft. Capsule truncated, many-seeded.—(*Lindl.*)

DESCRIPTION, &c.—Tender annuals, with very curious flowers. The name of *Celosia* is said to be derived from a Greek word signifying something burnt, because the flowers look as if scorched, and dried up, by exposure to heat.

1.—CELOSIA COCCINEA, *Mill.* THE SCARLET COCKSCOMB.

ENGRAVING.—*Bot. Reg. t. 1834.*

SPECIFIC CHARACTER.—Leaves narrow, lanceolate, acuminate; stem

furrowed; ears numerous, and compressed into the form of an acuminate pyramid; stamens shorter than the calyx.

DESCRIPTION, &c.—A very curious plant, differing from the common Cockscomb not only in the looseness of the head of flowers, but in its shape, which is that of a pyramid. It is also a much hardier plant, and only requires to be raised on a hotbed, and not planted out till May; after which, as Dr. Lindley observes, "it goes on enlarging its glowing crimson tassels in the open border, till winter destroys it." This plant is supposed to be a native of China, from which country it is said to have been introduced before the time of Gerard, 1597.

CELOSIA CRISTATA, *Lin.*

This very handsome and well-known plant derives its popular name of Cockscomb from its crested head of flowers, which resembles in form and colour the crest of a cock. It is a tender annual, a native of Japan, and other

parts of Eastern Asia; introduced in 1570. The seeds, which are small, black, and shining, like those of Love-lies-Bleeding, may be procured in any seed-shop, and the plants raised on a hotbed. The after culture is exactly like that of the garden Balsam; the size and beauty of the cockscomb depending upon the number of times it is shifted into different pots before it comes into flower. There is a drawing of a very large Cockscomb in the Library of the Horticultural Society in Regent Street. This plant, which was raised by the late T. A. Knight, Esq., at Downton Castle, was very large, the flower measuring eighteen inches in width, and seven in height; but, in 1834, a much larger was sent to Mr. Loudon by Mr. John Pattison, gardener to Joseph Trueman, Esq. Grosvenor House, Walthamstow, Essex. This enormous Cockscomb, which was perhaps the largest ever grown, measured in height two feet four inches; one of the leaves was one foot long and five inches broad: and the flower was very nearly two feet in length, and fifteen inches in breadth. It was also remarkably well-grown, with healthy leaves, and a very handsome symmetrical flower; and, if we recollect rightly, it had, in the course of its culture, been shifted successively into eleven different pots, each a little larger than the preceding one. There are several other annual species of *Celosia*; but it is said that they will none of them live but in the temperature of a stove.

GENUS III.

GOMPHRENA, *R. Br.* THE GLOBE AMARANTH.*Lin. Syst.* PENTANDRIA DIGYNIA.

<p>GENERIC CHARACTER.—Perianth 5-parted. Stamens 5, connected at the base into a sub-cylindrical tube, which is larger than the ovary, but distinct at the apex; with or without bifid teeth. Anthers</p>	<p>1-celled. Style 1. Stigmas 2. Capsule 1-seeded and valved.— (<i>R. Br.</i>)</p>
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GOMPHRENA GLOBOSA, *Lin.*; *Bot. Mag. t.* 2815.

This is evidently the true Amaranth of the poets; as its flowers are as they describe, round, of a deep purple, and everlasting. Notwithstanding this, the plant when growing has but little beauty to recommend it; the shape of the heads of the flowers resembles that of the heads of common clover, and they are produced on long stiff stalks bare of leaves. When gathered and closely examined, the colour, texture, and structure of the flowers will be found very beautiful. The most remarkable quality in the *Globe Amaranth* is its long duration. The calyx, which constitutes the flower, is indeed of so dry a texture that it seems dead even while it is growing, and it is to this fine thin membranous texture that the flowers owe their glossiness and beauty. The *Globe Amaranth* is a native of the East Indies; and though it was not introduced into England till 1714, it has been long known on the Continent. It appears in every country where it has been known, to have been a favourite decoration for funerals. Homer describes the Thessalians as wearing crowns of Amaranths at the funeral of Achilles; and Milton, when speaking of the multitude of angels assembled before the Deity, says,—

——— “ to the ground
 With solemn adoration down they cast
 Their crowns, in-wove with Amaranth and gold;
 Immortal Amaranth, a flower which once
 In Paradise, fast by the tree of life,
 Began to bloom, but soon for man's offence

To heaven removed, where first it grew, there grows
 And flowers aloft, shading the fount of life.
 And where the river of bliss, through midst of heaven,
 Rolls o'er Elysian flowers her amber stream;
 With these that never fade, the spirits elect
 Bind their resplendent locks enwreathed with beams;
 Now in loose garlands thick thrown off, the bright
 Pavement, that like a sea of jasper shone,
 Impurpled with celestial roses smiled."

In the churches on the Continent, the *Globe Amaranth* is generally used, as a symbol of eternity, to deck the shrines on fête days; and it is sold in Paris with the *Gnaphalium*, the *Helichrysum*, and the *Xeranthemum*, woven into wreaths, to hang on the tombs in the cemetery of Père la Chaise.

CHAPTER XXXII.

CHENOPODIACEÆ.

ESSENTIAL CHARACTER.—Perianth deeply divided, persistent, with the bottom of the cell. Style usually left. Pericarp valveless. an imbricate æstivation. Stamens inserted in the bottom of the Albumen mealy. Embryo curved or spiral. Herbs, or undershrubs. perianth; equal in number to its segments, and opposite to them, Leaves alternate, rarely opposite. Flowers insignificant, often unisexual. seldom fewer. Ovarium usually free, one-seeded. Ovulum fixed to —(*G. Don.*)

DESCRIPTION, &c.—This order comprises several of our commonest and most worthless weeds, with several valuable spinach plants. The flowers are greenish, and inconspicuous; and the only ornamental plants belonging to the order owe their sole beauty to their fruit.

GENUS I.

BLITUM, *Lin.* THE BLITE.

Lin. Syst. MONANDRIA DIGYNIA.

GENERIC CHARACTER.—Calyx 3-cleft. Petals none. Fruit a berry.—(*Lin.*)

1.—BLITUM CAPITATUM, *Lin.* THE BERRY-HEADED STRAWBERRY BLITE, OR STRAWBERRY SPINACH.

SPECIFIC CHARACTER.—Heads spiked, terminal.—(*Lin.*)

DESCRIPTION, &c.—The plant grows generally two or three feet high, and spreads proportionately where it is allowed room. The leaves resemble those of spinach. The flowers appear in small heads at every joint, and at the termination of the twig; and, after they have dropped the bracts, swell like those of the pine-apple, and form a berry-like fruit, which when ripe has somewhat the appearance of a wood strawberry, or rather of a red mulberry. The seed is black when ripe. The plant is a native of Central Europe, and was grown by Parkinson in 1633.

2.—BLITUM VIRGATUM, *Lin.* THE COMMON, OR SLENDER-BRANCHED STRAWBERRY BLITE.

ENGRAVINGS.—Bot. Mag. t. 276.

SPECIFIC CHARACTER.—Heads scattered, lateral.—(*Lin.*)

DESCRIPTION, &c.—Differing very slightly from the preceding species, but not having any terminal heads. It is a native of the south of Europe, and was introduced in 1759. Both species were formerly favourites in

gardens, and the berries were used for colouring made-dishes in cookery. The seeds should be sown in March or April, and when the plants come up they should be thinned out; observing, however, that they will not bear transplanting after the flower-stem has begun to grow. They require frequent watering, and if the flower-stems are supported with sticks, so that the branches may spread out handsomely on each side, the plants will look very well when in fruit.

CHAPTER XXXIII.

POLYGONACEÆ.

ESSENTIAL CHARACTER.—Perianth 1-leaved, divided, imbricated in aestivation. Stamens definite, inserted in the base of the perianth. Ovary free, 1-seeded; ovule erect. Styles numerous. Albumen farinaeous; embryo inverted, generally on one side. Leaves alternate, sheathing at the base or adnate to the intra-foliaeous sheath. Flowers usually of separate sexes, generally racemose.—(*G. Don.*)

DESCRIPTION, &c.—Several very well-known plants are classed by modern botanists in this order; the most remarkable of which are the Buckwheat (*Polygonum jagopyrum*), tart Rhubarb (*Rheum undulatum*), Dock and Sorrels, &c. The only ornamental annual plants in the order are the *Persicarias*.

GENUS I.

POLYGONUM, *Lin.* THE POLYGONUM.

Lin. Syst. OCTANDRIA TRIGYNIA.

GENERIC CHARACTER.—Calyx 5-parted, coloured. Corolla none. Seed 1, angular.—(*Lin.*)

DESCRIPTION, &c.—The genus *Polygonum* comprises many British weeds, particularly the Knot-grass (*P. aviculare*), which is so common in garden walks; the showy-Water pepper (*P. amphibium*), so abundant on the large piece of water in Kensington Gardens; and the common *Persicaria*. The Buck-wheat, as we have already observed, also belongs to this genus. The only plant, however, included in it which is cultivated in gardens, is the Garden *Persicaria* (*P. orientale*).

1.—POLYGONUM ORIENTALE, *Jacq.* THE GARDEN PERSICARIA.

ENGRAVINGS.—Bot. Mag. t. 213.

SPECIFIC CHARACTER.—Stem erect. Leaves ovate. Stamens 7, styles 2. Stipules hairy, and hypocotiform.

DESCRIPTION, &c.—The Garden *Persicaria* is a very showy plant, growing, in favourable situations, eight or ten feet high, with loose branched spikes of deep rose-coloured flowers. The flowers are much larger than those of any other plant of the genus; and the stipules show plainly the peculiarity of their construction, which modern botanists make one of the distinguishing characteristics of the order. This peculiarity is termed *ochrea* or boots, and it consists in the stipules being joined together round the stem, and forming a sort of tube for the joints to pass through. In the Garden *Persicaria* the stipules are so large, and so much wrinkled, that they look like deep ruffles. There are two varieties, one dwarf, and the other with white flowers. The species is a native of the East Indies, and also of Asia Minor and Egypt; and it was introduced in 1707, by the Duchess of Beaufort. Though a native of hot countries, it is quite hardy; and only requires sowing with the other annuals in March or April. It should be sowed thin, as the seeds keep well and generally all vegetate; and when it comes up it should be thinned out, or left in a mass, according as it is wanted to grow high or spreading. It is an excellent plant for London gardens where there is room for it to grow, as it is not in the least degree injured by smoke.

CHAPTER XXXIV.

COMPOSITÆ.

ESSENTIAL CHARACTER.—Limb of calyx wanting or membranaceous, or divided into bristles, paleæ, or hairs. Corolla 5-toothed or 5-lobed, tubular, ligulate, or bilabiate, inserted on the top of the ovary. Stamens 5, distinct, perigynous. Anthers combined, seldom free. Ovary adhering to the tube of the calyx, 1-celled, 1-seeded. Style

one. Stigmas two. Fruit an achenium crowned by the limb of the calyx. Albumen none. Usually herbs, rarely shrubs. Leaves exstipulate. Flowers disposed in heads on a receptacle, or surrounded by an involucre, the scales of which are sometimes mixed with the flowers and are then called paleæ.—(*G. Don.*)

DESCRIPTION, &c.—Composite flowers take their name from being each composed of a great number of small flowers or florets. Thus what we call a daisy, is in fact a head or cluster of small flowers, each perfect in itself, and each capable of producing fruit or seed. These small flowers, or florets, are of two kinds: viz. those composing what is called the ray, and which in the daisy are white; and those composing the disk, which in the daisy, and many other composite flowers, are yellow. The florets of the ray are called ligulate, and are shaped somewhat like a cornet of paper, being widely open at top, and tubular only at the bottom; while the florets of the disk are called tubular, from their being tube-shaped throughout. In many of the genera, as for example in the Dandelion, the seeds or rather the fruit, are crowned with a kind of feather or wing, which botanists call the pappus. As the flowers belonging to this order are very numerous, botanists have classed them in several minor divisions; and the latest and most masterly of these modes of arrangement is that given by Professor De Candolle in the fifth, sixth, and seventh volumes of his *Prodromus*, in which all the Compositæ are arranged in three great divisions; and these are again divided into eight distinct tribes. It would be useless, in a work like the present, to enter into any detailed account of these tribes; particularly as several of them do not contain any ornamental annual flowers; and we shall therefore content ourselves with merely placing the flowers contained in each tribe together, and mentioning the name of the tribe before that of the first plant belonging to it that we describe. The generic and specific characters are greatly shortened; and we are indebted for them to our excellent friend Geo. Don, Esq., F.L.S., whose merits as a botanist are too well known to need any eulogium from us. We have generally retained the popular names of the plants, by which they are known in the nurseries and seed-shops, as the principal ones; and have given the new names as synonymes: but in some instances we have deviated from this rule; as for example in calling *Madia splendens* by its new name of *Madaria*; *Rudbeckia amplexicaulis*, *Dracopis*, &c.; because these names were attached to the figures of the flowers in our plates.

Before quitting the subject it may be as well to mention that the old arrangement of the composite flowers was into three sections, the first of which contained the radiate flowered plants, such as the aster, the sun-flower, &c., the flower-heads of which consist of tubular florets in the disk and ligulate florets in the ray; the second, the thistle-headed plants, the florets in the flower-heads of which are all tubular, but spreading very wide at the mouth, as in the *Centaurea* or *Blucbottle*, *Sweet Sultan*, &c.; and the third, the succory-headed plants, the flower-heads of which are composed entirely of ligulate florets, such as the *Tragopon* or *Goat's Beard*, *Hawkweed*, &c.

TRIBE EUPATORIACEÆ.

GENUS I.

AGERATUM, *Lin.* THE AGERATUM.*Lin. Syst.* SYNGENESIA ÆQUALIS.

GENERIC CHARACTER.—Head of many flowers, nearly globose. Involucre consisting of many imbricate linear scales. Receptacle naked. Corolla 5-cleft. Fruit ucarly pentagonal, attenuated at the base. Pappus palaceous.

1.—AGERATUM MEXICANUM, *Sims.* THE MEXICAN AGERATUM.

SYNONYME.—*A. conyzoides*, var. *Mexicanum*, *Dec.*

ENGRAVINGS.—*Bot. Mag.* t. 2524; *Swt. Brit. Flow. Gard.* t. 89; and our *fig. 1*, in Plate 31.

SPECIFIC CHARACTER.—Stem hairy. Leaves ovate, nearly obtuse. Flowers blue. Pallea of the pappus, dilated at the base, and awned at the apex.

DESCRIPTION, &c.—This very curious flower was introduced in 1822 from Mexico, by Mr. Bullock, so well known about that period for his exhibition of rein-deer, &c. The name of *Ageratum* is taken from two Greek words, signifying not to grow old; in allusion to the great length of time that the plant continues in flower without changing. *Ageratum Mexicanum* is generally considered as a half-hardy annual, and is raised on a hot-bed in February, and planted out in May; and though the seeds may be sown in a warm border in April without any danger of injury to the young plants from cold, it is generally better to raise them on a hotbed, or to purchase the young plants from a nurseryman, as when the seeds are sown in the open border, the plants will not flower till late in autumn, and the seeds will rarely ripen. The seeds should be sown thickly, as many of them are generally imperfect and will not vegetate. The *Ageratum* is a valuable flower for a bouquet, from the great length of time that it remains without fading. As it grows from one and a half to two feet high, and spreads a good deal, it is more suitable for a large garden than for a small one.

OTHER SPECIES.

There are several other species of *Ageratum* enumerated in the *Hortus Britannicus*, and other Catalogues of plants, all of which are annuals; but *A. Mexicanum* is the only kind now grown in flower-gardens.

TRIBE ASTEROIDEÆ.

GENUS II.

ASTER, *Lin.* THE ASTER, OR STARWORT.*Lin. Syst.* SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Flowers of the ray ligulate, female; those of the disk hermaphrodite, tubular. Receptacle rather convex.

Involucral scales in three or four series; spreading and ciliated. Fruit obovate, compressed. Pappus double, deciduous.

1.—ASTER CHINENSIS, *Lin.* THE CHINA ASTER.

SYNONYMS.—*Callistema hortense*, *Cass.*; *Callistephus chinensis*, *Nees.* and *Dec.*; *Diplopappus chinensis*, *Less.*; *Reine Marguerite*, *French.*

ENGRAVINGS.—Our Plate 36.

VARIETIES.—These are very numerous; varying not only in colour, but in the form of the petals, some of which are quilled, as in *fig. 1*, in Plate 36; others are quite dwarf, and very handsome. The red,

fig. 3, the blue, *fig. 4*, and the white, *fig. 5*, in Plate 36, were the first kinds introduced into England; but the striped variety, *fig. 2*, which is of the kind called the German aster, is of quite recent introduction.

SPECIFIC CHARACTER.—Lower leaves spatulate, under ones rhomboid, and upper ones oblong; all toothed, and somewhat ciliated. Branches elongated, each bearing a solitary head of flowers.

DESCRIPTION, &c.—China Asters were first introduced into Europe by Father D'Incarville, a missionary in



Aster chinensis

1. var. *multiplax* (or *quilled*) — 2. var. *stratum*. — 3. var. *rubrum*
 4. var. *caeruleum* — 5 var. *album*.

China, whose name was given by botanists to two species of handsome Chinese trumpet-shaped flowers, now incorporated in the genera *Tecoma* and *Bignonia*. Father D'Incarville took the seeds of the China Asters from China to Paris in 1730, and in 1731 Miller received some seeds from the Jardin des Plantes in Paris, which he raised in the Botanic Garden at Chelsea. The first kinds introduced were the single red and the single white ; but the single blue, or rather purple, was obtained soon afterwards, and from these the numerous hybrids and varieties have been raised which decorate our gardens. The kinds called German Asters, like the German Stocks (see p. 66, and p. 67), are merely hybrids and varieties raised in Germany ; and excellent German seeds may be had from Carter's, Holborn. The French are particularly fond of China Asters, and grow them to great perfection. Their name for the flower is *la Reine Marguerite*, which is supposed to mean simply the Queen Daisy, as the French name for the Daisy is *Marguerite*, given to it, as it is said, from the fondness of Margaret of Valois for that common wild-flower.

CULTURE.—China Asters are generally raised on a hotbed ; and when wanted to flower finely, the young plants should be purchased of a nurseryman in May. When raised in the open ground, the seeds should be sown in a warm border early in April, and the plants pricked out towards the end of May, or sooner ; when they are about three inches high. In all cases, China Asters do best when transplanted ; as, when left where they were sown, the flowers are generally poor. It is also not thought advisable to grow China Asters two years in succession on the same ground. When pricked out from the seed-bed, the young plants should be put into a bed of very rich soil, trenched at least a spade deep, and mixed with well-rotten dung from an old hotbed ; though some cultivators prefer ground that has been richly manured the previous season. The plants in this bed of rich earth, should be placed at least six inches or a foot apart from each other every way, and shaded and well watered after transplanting. When they are to be placed so as to produce an effect by their colours, in forming figures, &c., they are generally again transplanted, just as they have formed their flower-buds, sufficiently for the colour to be distinguished ; taking them up carefully with an instrument called a transplanter, used in removing tulips, so as not to break the balls of earth round the roots of each plant. Chalked string is then stretched over the beds, so as to form the figure required, and the Asters are carefully planted in stars, circles, letters, crescents, rainbows, &c., according to the fancy of the florist. We once saw in a French garden, purple Asters planted among white ones, so as to form a dark purple star on a white ground, which produced a very striking and beautiful effect. China Asters look very well on a bank planted in rows, one colour in each row ; or in rings of different colours round a circle ; with the tallest plants in the centre, and the dwarf plants nearest the edge.

2.—ASTER TENELLUS, *Lin.* THE SLENDER ASTER, OR DWARF ANNUAL MICHAELMAS DAISY.

SYNONYMES.—*Felicia tenella*, *Nees*, and *Dec.* ; *F. fragilis*, *Cass.* ; *Aster dentatus*, *Thun.* ; *Kaulfussia ciliata*, *Spreng.* ; *Cineraria tenella*, *Link.*

ENGRAVINGS.—*Bot. Mag.* t. 33.

SPECIFIC CHARACTER.—Leaves linear, ciliated. Branches naked, bearing each a single head of flowers.

DESCRIPTION, &c.—A very elegant little flower, which, though introduced so long back as 1769, has only lately become a favourite in our gardens. It is a native of North America, and was originally considered a greenhouse perennial ; but it has been found to succeed quite well treated as a hardy annual, and as such the seed is now generally sold in the seed-shops. The seeds should be sown in March, and the plants will not need any further culture.

GENUS III.

KAULFUSSIA, *Nees*. THE KAULFUSSIA.*Lin. Syst.* SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Flowers of the ray ligulate, female; those of the disk hermaphrodite, tubular. Receptacle honeycombed. Involucral scales in two series; those of the outer series flat, and those

of the inner series keeled. Fruit obovate, compressed; those of the ray without any pappus; the pappus of the fruit of the disk composed of one series of capillary, plumose bristles.

KAULFUSSIA AMELLOIDES, *Nees*. THE AMELLUS-LIKE KAULFUSSIA.

SYNONYMES.—*Charicis heterophylla* var. *Dec.*; *C. Neesii*, *Cass.*

ENGRAVINGS.—*Bot. Mag.* t. 2177; *Bot. Reg.* t. 409; and our *fig.* 3, in Plate 31.

SPECIFIC CHARACTER.—Lower leaves opposite, the rest alternate; oblong and lanceolate; 3-curved at the base. Peduncles terminal and leafless; heads of flowers at first yellowish, then blue.

DESCRIPTION, &c.—This very beautiful little plant is a native of the Cape of Good Hope, from which country it was introduced in 1820, and was first raised by Mr. Anderson in the Botanic Garden, Chelsea. It was formerly considered as only half-hardy, and was raised on a hot bed; but it is now found to succeed quite well if sown in the open border in April. It affords a powerful contrast to the *Ageratum* both in the development and duration of its flowers; and as that plant is remarkably slow in both, so is this remarkably quick. Plants of the *Kaulfussia*, the seeds of which were sown in April, will come into flower in May, or the beginning of June; and by the latter end of that month all their petals will be curled up, and their seeds beginning to ripen. In nurseries, the seeds are generally gathered early in July, and the plants removed. It is quite a dwarf plant, and beds of it appear one mass of flowers. The seeds are generally good and come up quickly, and the plants will bear transplanting if too thick; though this is rarely the case, as, from their small size, they do not look well unless near together. The flower heads, when they first appear, are yellowish; they then become of a pale blue, but before they curl up, they turn of a beautiful, rich, dark, mazarine blue, or almost purple.

TRIBE SENECONIDEÆ, *Dec.*

In this tribe are included more than three-fourths of all the ornamental annual Compositæ.

GENUS IV.

DRACOPIS, *Cass.* THE DRACOPIS, OR STEM-CLASPING RUDBECKIA.*Lin. Syst.* SYNGENESIA FRUSTRANEA.

GENERIC CHARACTER.—Flowers of the ray, ligulate, neuter; those of the disk hermaphrodite and tubular. Involucral scales in two series; outer series composed of six or eight linear spreading scales;

inner series composed of small adpressed scales. Fruit cylindrical, attenuated at the base; pappus crown-formed, quite entire.

DRACOPIS AMPLEXICAULIS, *Cass.* THE STEM-CLASPING DRACOPIS.

SYNONYMES.—*Rudbeckia amplexicaulis*, *Vahl.*; *R. amplexifolia*, *Jacq.*; *R. perfoliata*, *Cav.*

ENGRAVINGS.—*Bot. Mag.* t. 3716; and our *fig.* 6 in Plate 32.

SPECIFIC CHARACTER.—Plant glabrous, branched; stem-leaves alternate, cordate, stem-clasping, entire. Head terminal, solitary.

DESCRIPTION, &c.—This plant, though introduced from Louisiana so long ago as 1793, appears to have been lost to our gardens till about 1835, when it was re-introduced by Drummond from New Orleans. There are two kinds; one with strongly-serrated leaves, figured by Jacquin, and the other the kind we have figured, with entire leaves and smaller flowers. The seeds, which may be had at Charlwood's, and other seed-shops, should be sown in March or April, and the stems of the plants tied up before they come into flower.



1. *Ageratum Mexicanum* 2. *Caralva coccinea* 3. *Helianthus mollisoides* 4. *Galena*
 5. *Aretotis Archemoides* 6. *Totus barbata* 7. *Oxyria Chrysanthemoides* 8. *Alb.*
 9. *Calliopsis Drummondii* 10. *Sphaeroglossa speciosa* 11. *Calliopsis tinctoria* 12. *Sonchella*
 13. *Synedrella* 14. *Calliopsis Arizonicus* 15. *Calliopsis* 16. *Calliopsis* 17. *Calliopsis*

GENUS V.
CALLIOPSIS, *Reich.* THE CALLIOPSIS.

Lin. Syst. SYNGENESIA FRUSTRANEA.

GENERIC CHARACTER.—Flowers of the ray neuter, ligulate, 3 to 5-toothed; those of the disk hermaphrodite, tubular. Involucral scales in two series; outer series short and squarrose; those of the inner series large, and erect. Receptacle flat, covered with linear deciduous paleæ. Fruit compressed, naked, truncate.

DESCRIPTION, &c.—The plants contained in this genus have been separated from those retained in the genus *Coreopsis*, on account of the palea of the receptacle being in the one case deciduous and in the other persistent; but this difference is of course only discoverable by a botanist on dissecting the flower. The names of the two genera, though somewhat similar in sound, have, however, a very different origin: *Coreopsis* being derived from *koris*, a bug, and *opsis*, the look of, in allusion to the shape of the seeds; and *Calliopsis* being derived from *kallistos*, the Greek word for most beautiful, in allusion to the beauty of the flowers.

1.—CALLIOPSIS TINCTORIA, *Dec.* THE DYEING CALLIOPSIS.

SYNONYMES.—*Coreopsis tinctoria*, *Nutt.*; *Diplosastera tinctoria*, *Tausel.*; *Calliopsis bicolor*, *Reich.*

ENGRAVINGS.—*Bot. Mag.* t. 2512; *Bot. Reg.* t. 846; and our *fig.* 11, in Plate 31.

entire lobes; upper leaves tripartitely multifid, with linear lobes. The fruit is minutely tuberculated, and wingless.

VARIETY.—*C. t.* 2 *atrosanguinea*, *Maund's Bot. Gard.* t. 538. The flowers are dark-red.

SPECIFIC CHARACTER.—Radical leaves pinnate, or bipinnate, with

DESCRIPTION, &c.—A very showy and well-known garden annual, with bright, orange-yellow flowers, more or less stained with blotches of dark-red; growing two or three feet high, much branched, and spreading widely in proportion to its height. It is a native of North America, where it was discovered in 1821, by Professor Nuttall, covering whole tracts of land in the Arkansas territory, between the Missouri and the Mississippi. It was particularly abundant on the vast plains of somewhat elevated ground near the Red River; and there the inhabitants used the dried flowers for dyeing red, on which account Nuttall gave the plant the specific name of *tinctoria*, signifying dyeing. *Calliopsis tinctoria* was first supposed to be tender, but it is now found quite hardy, so much so, indeed, that it may be sown in autumn, to stand through the winter, without any care. Thus treated, it will produce very large and fine plants, which will flower early in May. The common treatment is, however, to sow it in the open border in February or March, and when the plants are two or three inches high, to thin them out, or transplant them, so as to leave the plants that are to flower at least six inches apart every way. Three plants will be quite sufficient for a tuft; and as they have very slender stems, they should each be tied to two or three thin sticks painted green, which should be driven firmly into the ground; or, what is perhaps better, each plant may be drawn through a dahlia hoop.

2.—CALLIOPSIS ATKINSONIANA, *Hook.* MR. ATKINSON'S CALLIOPSIS.

SYNONYME.—*Coreopsis Atkinsoniana*, *Dougl.*

ENGRAVINGS.—*Bot. Reg.* t. 1376; and our *fig.* 14, in Plate 31.

SPECIFIC CHARACTER.—Radical leaves bipinnate, with entire lobes;

stem-leaves pinnate, with narrow subspatulate lobes. Fruit margined with a short wing, quite smooth.

DESCRIPTION, &c.—Very distinct from *C. tinctoria*, in its flowers being of a pale yellow, less blotched, smaller, more cup-shaped, and more numerous. It is marked in the *Bot. Reg.* as a perennial, but we have always found it succeed quite well treated as an annual, and if sown at the same time as *C. tinctoria*, it generally comes into flower a few days before that species. It was found by Douglas in 1825, growing abundantly on an island in the river Columbia in California.

3.—CALLIOPSIS DRUMMONDI, *D. Don.* DRUMMOND'S CALLIOPSIS.

SYNONYMES.—*Coreopsis diversifolia*, *Hook.*; *C. auriculata*, var. *diversifolia*, *Elliott*.

ENGRAVINGS.—*Bot. Mag.* t. 3474; *Swt. Brit. Flow. Gard.* 2nd Ser., t. 315; and our *fig. 9*, in Plate 31.

SPECIFIC CHARACTER.—Plant hairy, or glabrous. Leaves ternate,

pinnate, and sometimes bipinnate. Leaflets roundish, obovate; obtuse, quite entire. Involucral scales with both series joined at the base. Flowers of the ray, quadrifid at the apex. Fruit oval, awnless, with a flat disk, and a thickened margin.

DESCRIPTION, &c.—When Mr. Drummond, the botanical collector, was at Texas, in Mexico, in 1834, he found large tracts of land covered with different kinds of *Calliopsis*, among which was this beautiful annual, which appeared to him, as it really is, much larger and finer than any of its congeners. He sent seeds to the Botanic Garden, Glasgow, which arrived in February 1835, and being sown immediately in the open air, produced flowers the following July. In the neighbourhood of London, seeds sown in March generally produce their flowers in June. The plant itself is of the easiest culture; for as it does not grow above a foot, or a foot and a half high, and has a much stronger stem than *C. tinctoria*, it does not require staking and tying up. As it does not branch so much, it also will not require thinning out, unless the seed has been sown very thickly. The specimen figured in our Plate 31, gives a very unfavourable idea of the plant, as the flowers are generally nearly twice as large; and certainly always larger, on an average, than those of the *Sphenogyne speciosa*, which is figured in the same plate as the *Calliopsis*.

OTHER SPECIES.

C. FILIFOLIA, *Hook.*, *Bot. Mag.* t. 3505.

One of the species of this genus, found by Drummond in Texas, and sent home by him with *C. Drummondii*. The flowers are smaller and more cup-shaped than those of that species; the florets of the ray are narrow, numerous, and quite yellow, and those of the disk are scarlet. The leaves are long and very narrow. The name is in Charlwood's seed-catalogue.

C. CORONATA, *Hook.*

Another species found by Drummond in Texas. The florets of the ray are very numerous, and they are long, narrow, and sharply dentated. They are of a bright orange, with a very singular ring of dark red spots spreading round the centre of the corolla, at a considerable distance from the disk, which is yellow, and much smaller than the disk of these flowers generally is. The root is very small, and somewhat carrot-shaped, and the stem being very weak and slender, requires tying up. The name of this species is also in Charlwood's catalogue.

GENUS VI.

HELIANTHUS, *Lin.* THE SUN-FLOWER.*Lin. Syst.* SYNGENESIA FRUSTRANEA.

GENERIC CHARACTER.—Head of many flowers. Flowers of the ray ligulate, neuter, those of the disk tubular, hermaphrodite; involucral scales irregularly imbricated; outer ones foliaceous, acute, appendiculated, inner ones smaller, palea-formed. Receptacle flat, or convex;

covered with half-clasping oblong paleæ. Fruit compressed, or subtrigonal, villous or glabrous. Pappus generally of two small scales, or awns.

1.—HELIANTHUS ANNUUS, *Lin.* THE ANNUAL SUNFLOWER.

SPECIFIC CHARACTER.—Stem generally simple. Leaves alternate, cordate, or nerved, coarsely serrated. Heads large, drooping. Scales of involucre ciliated. Fruit of the disk furnished with two awns.

DESCRIPTION, &c.—The common sun-flower is a native of Peru, where it was regarded in the time of the Incas as a sacred flower, and imitations of it in gold were worn by the virgins of the sun, at their great festivals.

This is the reason why this plant was called the sun-flower ; a name before appropriated to the *Helianthemum*, or Sun-rose, which no doubt was the plant alluded to by Ovid, when he represented Clytia as pining herself to death for love of Apollo, and being changed by the pitying God into a flower, which always turned to the sun. The Italian *Helianthemum* is indeed of a pale yellow, admirably expressive of the complexion of a sickly girl pining herself away for love, which Ovid describes by saying that the flower retained Clytia's wan paleness ; an expression which becomes absurd when applied to a flower of such a glowing colour as the Peruvian Sun-flower. The *Helianthemum* also does turn to the sun, and only opens under the influence of its beams ; while the Peruvian Sun-flower has generally its flowers turned in opposite directions. The common Sun-flower was cultivated by Gerard, before 1596 ; as he mentions it under the names of the Flower of the Sun, or the Great Marigold of Peru ; and tells us that he had one which grew in his garden in Holborn, to the height of fourteen feet, and produced flowers which measured sixteen inches across.

The culture of the Sunflower is as simple as possible, as the seeds only require to be sown in any soil or situation, or at almost any season, to vegetate ; and the stalk is too strong to require any training or tying up. It is, however, too large a flower for a small garden. The Sunflower has occasionally been cultivated both in Europe and America for commercial purposes ; and Mr. Taylor, a London seedsman, has many acres covered with it, from which he has succeeded in making oil from the seeds, thread and paper from the fibre, and potash from the ashes of the refuse.

OTHER ANNUAL KINDS OF HELIANTHUS.

H. INDICUS, Lin.

A dwarf species, a native of Egypt, not growing more than eighteen inches or two feet high ; introduced in 1785. De Candolle considers this kind, and the *H. humilis* of Persoon, as varieties of the common sunflower.

H. PETIOLARIS, Nutt. ; Swt. Brit. Flow. Gard.

A very handsome species, a native of the sandy plains of the Arkansas ; and found there by Professor Nuttall in 1821, though it does not appear to have been introduced into England till 1825. It is a very handsome species, greatly resembling the common perennial sunflower ; but the flowers are larger, and have a rich dark purple centre. Seeds may be procured at Charlwood's.

H. LENTICULARIS, Doug. ; Bot. Reg. t. 1265.

A very showy species, the flowers of which have an intense yellow ray, and dark reddish purple disk. It was discovered in the Arkansas territory of North America, by Douglas, and sent to England in 1833 ; but we do not know where seeds are now to be procured.

H. OVATUS, Lehm.

This species is frequently sold in the seed-shops for *H. petiolaris*, but it is not so handsome, having a much paler disk. It is a native of Mexico.

H. MACROCARPUS, Dec.

This is the kind usually sold by the French seedsmen, under the name of the hybrid long-seeded sunflower. The florets of the ray are large, and of a pale lemon colour, and those of the disk are yellow.

H. PATENS, Lehm.

The stem is strong and erect ; and the branches widely spreading. The flowers have a rich purple disk, and a bright yellow ray. The plant is a native of the southern provinces of North America.

H. SPECIOSUS, *Hook.*; Bot. Mag. 3295; syn. LEIGHIA SPECIOSA, *Dec.*; ? TITHONIA TAGETIFLORA, *D. Don.*, Bot. Reg. t. 591.

This very singular flower has an orange scarlet ray, and a bright golden yellow disk. The flower stalk is swollen near the flower like that of a French marigold; and the appearance of the disk and ray somewhat resembles that of a Zinnia. It is a native of Mexico, and was introduced in 1834.

GENUS VII.

BIDENS, *Lin.* THE BUR-MARIGOLD.

Lin. Syst. SYNGENESIA FRUSTRANEA.

GENERIC CHARACTER.—Flowers of the ray ligulate, neuter; flowers of the disk tubular, hermaphrodite; involucre scales in two series. Receptacle flattish, paleaceous. Fruit more or less compressed, prickly, terminated by a beak, which ends in two or five stiff hairy awns.

1. BIDENS STRIATA, *Swt.* THE STRIATED BUR-MARIGOLD.

ENGRAVINGS.—*Swt. Brit. Flow. Gard.* t. 237; Bot. Mag. t. 3155. SPECIFIC CHARACTER.—Stem somewhat tetragonal, striated, rather downy. Leaves glabrous, ternate. Leaflets ovate-lanceolate, acuminate, serrated. Heads corymbose, pedicellate, the outer scales of the involucre compressed. Fruit somewhat tetragonal, with scabrous angles, terminated by two bristles.

DESCRIPTION, &c.—A vigorous-growing showy annual, having rather small flowers, consisting of only five white florets in the ray, with a golden yellow disk. The plant is not suitable for a small garden, as the stem grows three or four feet high, with numerous branches, and a great number of rather large and coarse-looking leaves; though it looks well in a large garden from the great profusion of its flowers. It is a native of Mexico, and was introduced about 1830. We saw the plant growing in the garden of Mr. Harrison's beautiful little villa at Cheshunt, in the summer of 1839; but we do not know where seeds can be procured in the shops.

2.—BIDENS GRANDIFLORA, *Ball.* THE LARGE-FLOWERED BUR-MARIGOLD.

SYNONYMS.—*B. odorata, Dun.*; *B. diversifolia, Hort.*; *B. serratula, Desf.*; *Coreopsis diversifolia, Jacq.*; *Kernesia serrulata, Cass.*; *Cosmea lutea, Sims.* SPECIFIC CHARACTER.—Stem cylindrical, glabrous. Leaves glabrous, pinnate, with three or five pairs of leaflets, some of which are oblong and serrated, or a little cut; others are divided into linear lobes. Heads pedicellate. Involucre scales ciliated. Fruit subtetragonal, glabrous; terminated by two or four awns.

ENGRAVINGS.—Bot. Mag. t. 1689; and our *fig. 11*, in Plate 32, under the name of *Cosmea lutea*.

DESCRIPTION, &c.—A pretty yellow flower, a native of Mexico, brought to England by Lord Holland from Madrid in 1812. It was described and figured by Dr. Sims in the Bot. Mag., under the name of *Cosmea lutea*; but it is quite evidently a *Bidens*, and it is called so in De Candolle's new arrangement. Seeds may be procured at Charlwood's, under the name of *Bidens diversifolia*, and they should be sown in a warm border in March or April, when they will flower in July.

GENUS VIII.

COSMEA, *Willd.* THE COSMEA.

Lin. Syst. SYNGENESIA FRUSTRANEA.

GENERIC CHARACTER.—Flowers of the ray ligulate, neuter. Flowers of the disk tubular, hermaphrodite. Involucre double; each composed of eight or ten scales, which are combined more or less at the base. Receptacle flat, paleaceous. Paleae membranous, each drawn out into a thread at the apex. Anthers each terminated by a scarious cordate appendage. Fruit tetragonal, beaked, and sometimes stipitate; crowned by 2—4 scabrous deciduous awns.

1.—COSMEA BIPINNATA, *Willd.* THE FINE-LEAVED COSMEA.

SYNONYME.—*Cosmos bipinnatus, Cav.*

ENGRAVINGS.—Bot. Mag. t. 1535.

SPECIFIC CHARACTER.—Quite glabrous. Leaves bipinnate, with

remote, quite entire, linear segments. Fruit glabrous, beaked; crowned by three awns.

DESCRIPTION, &c.—This beautiful plant was discovered in Mexico, before 1789; as seeds of it sent to

Madrid produced plants, which blossomed in that year in the Royal Botanic Garden of Spain. It was first described and figured in 1797, by Cavanilles, who called it *Cosmos*, from the Greek word *Kosmos*, beautiful; but this name was afterwards altered by Willdenow to *Cosmea*, as being more consistent with the rules of botanical nomenclature. It does not appear to have been introduced into England till 1804; and then to have been soon lost. This is easily accounted for; as it is found that if the plants are not brought forward by artificial heat, they will not be sufficiently advanced to ripen their seeds before the setting in of the frost. In Madrid, the plants did not come into flower till October, and did not ripen their seeds till December. Seeds of this species may be procured at Carter's, Holborn; and they should be sown in January on a slight hotbed, or in a warm border, and covered with a hand-glass, being sheltered in frosty weather, and during cold nights with the addition of a bast mat. Plants thus treated will grow freely—some in Mr. Henderson's nursery in the Edgeware Road being, in the summer of 1838, nearly six feet high; and they will produce their splendid large pink flowers in September and October. *C. diversifolia*, another Mexican species, has tuberous roots like those of a dahlia, and should be treated in the same manner.

2.—COSMEA TENUIFOLIA. THE SLENDER-LEAVED COSMEA.

SYNONYME.—*Cosinus tenuifolius*, *Lindl.*

ENGRAVINGS.—Bot. Reg. t. 2007; and our *fig.* 1, in Plate 32.

SPECIFIC CHARACTER.—The whole plant very smooth. Leaves

bipinnate. Lobes linear, remote, acute, entire or divided. Involucrum with ovate, acuminate, exterior scales. Fruit rough, beaked, and crowned with from one to three bristles.

DESCRIPTION, &c.—Closely resembling *C. bipinnata*, but differing in the leaves being still more finely cut, and sometimes again divided at their points; in the scales of the involucrum being less acuminate; and in the fruit being rough, with a longer beak, and being frequently found with only one bristle. The flowers also are more purple or of a reddish lilac than those of *C. bipinnata*, which are decidedly pink. *C. tenuifolia* is a native of Mexico, and requires the same treatment as the preceding species. It does not however grow so high, and is therefore more manageable in a small garden.

GENUS IX.

SANVITALIA, *Gault.* THE SANVITALIA.

Lin. Syst. SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Flowers of the ray ligulate, female, persistent; those of the disk, hermaphrodite, tubular. Involucral scales in two or three series. Scales adpressed, somewhat imbricated, the inner ones rather longer than the rest. Receptacle conical, furnished with

half-clasping oblong paleae. Fruit of the ray triquetrous, smooth, crowned by three thick awns; those of the disk compressed, of two forms, the outer ones mucronate, the inner ones winged, ciliated, and ending in two small awns.

SANVITALIA PROCUMBENS, *Lam.* THE TRAILING SANVITALIA.

SYNONYMS.—*S. villosa*, *Cav.*; *Lorentea atropurpurea*, *Orteg.*

ENGRAVINGS.—Bot. Reg. t. 707; and our *fig.* 12, in Plate 31.

SPECIFIC CHARACTER.—Stem procumbent, or diffuse. Leaves ovate. Flowers of the ray exceeding the awns of the fruit.

DESCRIPTION, &c.—This very beautiful little plant is a native of Mexico, from which country it was sent to Cavanilles, at Madrid, and Lady Bute brought seeds of it from the Botanic Garden in that city to England in 1798. Notwithstanding the number of years that it has been in the country, this flower was very little known till within the last few years, when it was accidentally brought into notice, and it has since become quite common in gardens and nurseries. It is a low, compact-growing plant, presenting a complete mass of flowers,

which are remarkable for their bright orange ray, and rich dark purple disk. It is quite hardy, and if the seeds are sown in February, March, or April, it will require no other care ; as from its low and neat habit of growth it will not need either training or thinning.

GENUS X.

TAGETES, *Tourn.* THE FRENCH AND AFRICAN MARIGOLDS.

Lin. Syst. SYNGENESIA SUPERFLUA.

<p>GENERIC CHARACTER.—Head radiate, somewhat discoid. Involucral scales in one series, combined into a campanulate, or cylindrical cup, which is toothed at the apex. Receptacle somewhat honey-combed.</p>	<p>Fruit elongated, attenuated at the base ; compressed, tetragonal. Pappus simple with unequal paleæ ; some obtuse and combined at the base, others awned, elongated, and free.</p>
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1.—TAGETES PATULA, *Lin.* THE SPREADING TAGETES, OR FRENCH MARIGOLD.

ENGRAVINGS.—Bot. Mag. t. 150 ; and our *fig.* 8, in Plate 32.

SPECIFIC CHARACTER.—Stem erect. Branches spreading. Leaves

pinnate, with linear-lanceolate serrated segments ; the upper serratures sometimes awned. Peduncles cylindrical, involucre smooth.

DESCRIPTION, &c.—The commonness of this flower prevents its exciting the admiration that its brilliant colours could not fail to obtain, if the plant they belong to were either new or rare. There are numerous varieties of it both single and double ; and these display great variety in the stripes, and in the proportion of dark red in each flower. Curtis, in the fifth volume of the Botanical Magazine, mentions that two principal varieties were then kept in gardens ; the common dwarf sort, with a very strong disagreeable smell, and a larger kind, usually called the sweet-scented, but which possessed no other claims to that title than being rather less disagreeable than the other. The history of this plant is involved in some obscurity ; as the early writers on plants appear to have confounded it with the upright or African Marigold. The striped Marigold is mentioned by Hernandez as being a native of Mexico ; and Gerard, who gives a good figure of it under the name of the French Marigold, says that it was also called the carnation or Gilliflower of Peru. At any rate it appears to have been very early in cultivation as a garden flower, as Gerard speaks of it as being well known at the time at which he wrote, viz. 1596. It is still a favourite in many gardens, and is frequently raised on a hotbed, and planted out in May.

2.—TAGETES ERECTA, *Lin.* THE ERECT TAGETES, OR AFRICAN MARIGOLD.

SPECIFIC CHARACTER.—Stem and branches erect. Leaves pinnate, with lanceolate, serrulated segments ; the upper serratures sometimes awned. Peduncles ventricose at the apex. Involucre rather angular.

DESCRIPTION, &c.—This well-known plant differs principally from the French Marigold in its colour, which is of a deep orange not striped with brownish-red. It is said to be a native of Africa, and to have been introduced into Europe by the Emperor Charles V. on his return from his expedition to Tunis in 1535. Fuchsius, in his History of Plants, the first edition of which was published in 1542, gives a very good figure of this Tagetes, under its old French name of Gyroflee-d'Inde ; and describes it as a kind of Indian wormwood. He adds that “ the flowers are at the extremity of the shoots, as yellow as saffron, and for beauty inferior to none.” He also mentions its having been brought to France from Germany. It appears to have been introduced into England with the striped Marigold, as both are figured and described together in the old books on plants. The culture is the same for both.



1. *Chrysanthemum leucanthemum* — 2. *Boerhaavia rubra* — 3. *Madaris elegans* — 4. *Chrysanthemum aurea*
Chrysa. — 5. *Chrysanthemum* — 6. *Dracopis amplexicaulis* — 7. *Gallianella Drummondii* — 8. *Gigotis patula* two varietal
 9. *Senecio elegans* — 10. *Senecio tuberosus* — 11. *Cosmos lutea*.

OTHER SPECIES OF TAGETES.

T. CORYMBOSA, *Swt. Brit. Fl. Gard.* t. 151.

This species has pink flowers. It is a native of Mexico, and was introduced in 1825. There is a yellow variety, but we do not know where seeds of either the variety or the species are to be procured.

T. TENUIFLORA, *Cav., Bot. Mag.* t. 2045.

A tall untidy-looking plant, with small, ill-shaped, yellow flowers. A native of Peru, introduced in 1797.

There are several other kinds of annual Tagetes, all with yellow flowers; but we have never seen them, and do not know where they are to be procured.

GENUS XI.

GAILLARDIA, *Foug.* THE GAILLARDIA.

Lin. Syst. SYNGENESIA FRUSTRANEA.

GENERIC CHARACTER.—Flowers of the ray ligulate, neuter, many-nerved, glandular, trifid at the apex; those of the disk hermaphrodite, tubular. Receptacle convex, fringed. Involucral scales in two or

three series, each furnished with a leafy, acuminate appendix. Fruit oblong, villous. Paleæ of the pappus one-nerved and awned.

1.—GAILLARDIA DRUMMONDII, *Dec.* MR. DRUMMOND'S GAILLARDIA.

SYNONYME.—*G. bicolor*, var. *Drummondii*, *Hook.*

ENGRAVING.—*Bot. Mag.* t. 2363.

SPECIFIC CHARACTER.—Plant rather downy. Leaves lanceolate,

undivided or cut. Corollas hairy, longer than the pappus. Paleæ of the pappus dilated at the base; ray flowers cuneate at the base.

DESCRIPTION, &c.—This splendid flower was discovered by Drummond at Rio Braxas, in Texas, in the autumn of 1833. It is a very handsome plant, with dark brownish-red flowers, tipped with yellow, and will continue flowering for several months. The seeds should be sown in February or March, or the plants raised on a slight hotbed to bring them forward, as unless this is done they will not come into flower till the latter end of August, or beginning of September.

2.—GAILLARDIA PULCHELLA, *Foug.* THE PRETTY GAILLARDIA.

SYNONYMES.—*Gaillardia bicolor*, *Lour.*; *Calonnea pulcherrima*, *Buhoz.*; *Virgilia heliodes*, *L'Herit.*; *Gaillardia amara*, *Raf.*; *G. alternifolia*, *Ræusch.*

ENGRAVING.—Our *fig. 7*, in Plate 32, under the name of *G. Drummondii*.

SPECIFIC CHARACTER.—Plant rather hairy. Corollas of the disk villous, length of pappus. Paleæ of the pappus stiff, narrowed at the base. Ray flowers very narrow at the base, spotted.

DESCRIPTION, &c.—Through the accidental misnaming of a specimen, this species has been figured in our Plate 32 under the name of *G. Drummondii*, from which it differs considerably, and to which it is much inferior in beauty. This species also differs considerably from the perennial plant figured under the name of *G. bicolor* in the *Bot. Mag.* t. 1602, and which, in Professor De Candolle's new arrangement, is called *G. lanceolata*. *G. pulchella* is a native of Louisiana, introduced about 1812; and it is the kind generally sold in the seed-shops as *G. bicolor*. The seeds should be sown in February or March, and the young plants sheltered in cold nights by a flower-pot being turned over them, or with a hand-glass, and they will flower in August.

GENUS XII.
LASTHENIA, *Cass.* THE LASTHENIA.

Lin. Syst. SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Flowers of the ray female, few, small, tubular, and obliquely truncate. Receptacle conical, papillose. Involucral scales in one series, combined into a 5, 8, or 15-toothed cup; the teeth

ciliated. Fruit compressed, pubescent. Paleæ of the pappus 5—10; toothed at the apex.

1.—LASTHENIA CALIFORNICA, *Lindl.* THE CALIFORNIAN LASTHENIA.

SYNONYMS.—*L. glaberrima*, *Dec.*

ENGRAVINGS.—*Bot. Reg.* 1823.

SPECIFIC CHARACTER.—Plant quite glabrous; involucre with 15 teeth. Pappus of 5 paleæ.

DESCRIPTION, &c.—This very pretty plant was discovered by Douglas in California, and sent home by him in 1835. Since that time it has seeded so freely, that it has become common in the nurseries and seed-shops. It is generally planted with *Nemophila insignis* in flower-borders, and it may be treated like the other Californian annuals, as described in p. 156, under the head of *Leptosiphon*. It is often confounded with *Burrielia gracilis*.

2.—LASTHENIA GLABRATA, *Lindl.* THE GLABROUS LASTHENIA.

SYNONYME.—*Hologymne glabrata*, *Barth.*; and *Hook.* in *Bot. Mag.*

ENGRAVINGS.—*Bot. Reg.* t. 1730; *Bot. Mag.* t. 3730; and our *fig.* 16, in Plate 31.

SPECIFIC CHARACTER.—Plant quite glabrous. Involucre of 15 teeth. Pappus wanting. Fruit mucronate.

DESCRIPTION, &c.—This species only differs from the preceding one in wanting the pappus, and in the manner in which the peduncles or footstalks are united to the involucre. In *L. californica*, the involucre is impressed at the base with a little cavity for the reception of the flower-stalk, and is thus cup-shaped; while in *L. glabrata*, the involucre tapers gradually into the flower-stalk, like a goblet, or an old-fashioned wine-glass, without any perceptible point of union. Both species differ from the *Burrielia*—a plant often sold instead of them—in their involucres being always entire, and only cut into broad, spreading teeth at the apex, while the involucre of the *Burrielia* is divided into a double series of lanceolate scales. The seeds of *L. glabrata* may be purchased at any seed-shop, and they should be treated like those of *L. californica*.

GENUS XIII.
BURRIELIA, *Dec.* THE BURRIELIA.

Lin. Syst. SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Head of many flowers. Flowers of the ray ligulate, obovate, female; those of the disk tubular, hermaphrodite, and sometimes sterile by abortion. Involucre campanulate, with oval acuminate scales. Receptacle apaleate. Achenes subtetra-

gonal; those of the ray nearly compressed, furnished with a two or three-awned pappus; those of the disk having a three or four-leaved pappus.

BURRIELIA GRACILIS, *Dec.* THE SLENDER BURRIELIA.

SYNONYME.—*Lasthenia Californica*, *Hort.*

ENGRAVINGS.—*Bot. Mag.* t. 3758.

SPECIFIC CHARACTER.—Scales of involucre eight; flowers of the ray eight.

DESCRIPTION, &c.—This genus, as already observed, is distinguished from *Lasthenia* by the different structure of the involucre, which is composed of several lanceolate scales in double series, whereas, the involucre of the *Lasthenias* is entire, and only cut into broad spreading teeth at the apex. The plant is a native of

California, and its seeds were sent home by Douglas with those of the *Lasthenias*, with which it is generally confounded, the flowers closely resembling those of that genus. Seeds of the *Burrielia* are seldom to be procured under their proper name; but when they are, they should be treated like those of the *Lasthenias*; and all the three kinds of plants, like all the Californian annuals, will come into flower at any time during the spring, summer, or autumn, about six weeks after sowing.

GENUS XIV.

HELENIUM, *Lin.* THE HELENIUM.

Lin. Syst. SYNGENESIA SUPERFLUA.

<p>GENERIC CHARACTER.—Flowers of the ray in one series, ligulate, rarely tubular; those of the disk hermaphrodite, tubular, 4 or 5-toothed. Receptacle convex, globose or oblong, naked. Involucral scales in two</p>	<p>series: outer scales many, deflexed or spreading; inner ones fewer and shorter, similar to the palæ of the receptacle. Fruit obovate, villous. Palæ of pappus 5 or 6, membranous.</p>
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HELENIUM QUADRIDENTATUM, *Lab.* THE FOUR-TOOTHED HELENIUM.

<p>SYNONYMES.—<i>Rudbeckia alata</i>, <i>Jacq.</i>; <i>Helenium Millerii</i>, <i>Schult.</i>; <i>Mesodetra alata</i>, <i>Raf.</i> ENGRAVINGS.—<i>Bot. Reg.</i> t. 598.</p>	<p>SPECIFIC CHARACTER.—Plant nearly glabrous. Stem erect, branched at apex. Leaves decurrent, oblong-linear; lower ones pinnatifid, upper ones quite entire. Involucrum very short.</p>
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DESCRIPTION, &c.—A very handsome plant with a bright orange-coloured ray, and elevated disk like that of a *Rudbeckia*. The stems are curiously shaped, and winged, and the leaves stem-clasping. The name of *Helenium* was originally applied to the *Inula Helenium*, the elecampane, which, in allusion to its cosmetic properties, was dedicated to Helen. The present plant is a native of Louisiana, from which country it was brought in 1790 by the Abbé Pourret. It is a hardy annual, which only requires sowing in March or April to flower in August or September. Though the stems are tolerably strong, yet, as the root is fibrous and slender, it is advisable to tie it up, if the situation in which it grows is at all exposed to the wind.

GENUS XV.

SOGALGINA, *Cass.* THE GALINSOGEA.

Lin. Syst. SYNGENESIA SUPERFLUA.

<p>GENERIC CHARACTER.—Flowers of the ray female, bilabiate: outer lip large, toothed at apex; inner lip divided into two linear segments. Flowers of the disk hermaphrodite, tubular. Involucrum hemi-</p>	<p>spherical; scales in two series; oval, blunt. Receptacle convex, furnished with oval, acuminate palæ which clasp the flowers. Fruit almost cylindrical. Palæ of pappus in one series, pinnate or pluurose.</p>
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SOGALGINA TRILOBATA, *Cass.* THE THREE-LOBED GALINSOGEA.

<p>SYNONYME.—<i>Galinsogea trilobata</i>, <i>Cav.</i> ENGRAVING.—<i>Bot. Mag.</i> t. 1895.</p>	<p>SPECIFIC CHARACTER.—Flowers of the ray cuneate, having the inner lip bipartite. Palæ of the pappus shorter than the fruit.</p>
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DESCRIPTION, &c.—This showy annual is a native of Mexico, from which country it was sent to Madrid, where Cavanilles supposing it to resemble the *Galinsogea quinque radiata* of Ruiz and Pavon, a Peruvian plant, gave it the name of *Galinsogea trilobata*. It has since been found to differ in the form of the florets of the ray, the shape of the receptacle, the colour of the flowers, &c., and it is now placed in another genus under the name of *Sogalgina*, which is an anagram of *Galinsogea*. The heads of flowers of the true *Galinsogea* are small with a

yellow disk and a white ray, while those of *Sogalygina* are rather large, and both disk and ray of a bright yellow. The name of *Galinsogea* was given to the original genus in honour of Dr. Martin de Galinsoga, first Physician to the Queen of Spain, and Director of the Royal Botanic Garden at Madrid, and we have retained it as the English name, as it is that by which the plant is known in the seed-shops and nurseries. It was introduced in 1797 by the Marchioness of Bute, and having been lost, it was re-introduced from Madrid by Lady Holland, about 1812. It is of very easy cultivation. The seeds, which may be bought in any seed-shop, should be sown in March or April, and the plants will need no other culture, except thinning out if the seed was sown too thickly.

GENUS XVI.

SPHENOGYNE, *R. Br.* THE SPHENOGYNE.

Lin. Syst. SYNGENESIA NECESSARIA.

<p>GENERIC CHARACTER.—Head of many flowers. Flowers of the ray ligulate, neuter. Flowers of the disk tubular hermaphrodite. Receptacle paleaceous, paleæ clasping the flowers. Involucrum campanulate</p>	<p>of many series of imbricated scales. Anthers terminated by a heart-shaped appendage. Fruit nearly cylindrical, surrounded by hairs. Pappus paleaceous.</p>
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1.—SPHENOGYNE ANTHEMOIDES, *R. Br.* THE CHAMOMILE-LIKE SPHENOGYNE.

SYNONYMS.—*Aretotis anthemoides*, *Linn.*; *A. pinnata* et *A. cernua*, *Thun.*; *A. paradoxa*, *Ait.*; *Ursiua anthemoides*, *Poir.*

ENGRAVINGS.—*Bot. Mag.* t. 544; and our *fig. 5*, in Plate 31, under the name of *Aretotis anthemoides*.

SPECIFIC CHARACTER.—Plant glabrous. Leaves irregularly bipinnate, with filiform segments. Pedicels elongated, naked. Paleæ of the pappus truncate. Ray flowers few.

DESCRIPTION, &c.—This flower is remarkable for being of a dark purple on the under side, and a bright yellow inside. The buds hang down modestly, but when the flowers expand, they hold themselves erect as though proud of their full vigour and beauty. When the plants decay the flower droops, till the seeds become ripe, when it again raises itself, and the crown of the seed expanding at the same time, it seems to have unfolded another flower, which has a corolla of five white petals and a brown star in the centre. This singular appearance is occasioned by the florets of the disk remaining attached to the seed, after they have withered and become whitish, and the florets of the ray have fallen. The stem branches very much at the base, and thus each plant bears a great many flowers. The leaves greatly resemble those of the Chamomile, and the whole plant has the same odour as that herb; whence the name of *Anthemoides* or Chamomile-like. The name of *Sphenogyne* is compounded from *Sphenos*, a wedge, and *gyenos*, female, and alludes to the wedge-shaped stigmas. The species in question is a native of the Cape of Good Hope, and was introduced in 1774. The seeds are common in the seed-shops, and they only require sowing in March or April to produce abundance of flowers from June till September or October. The plant is of low growth, seldom exceeding six inches; and from this circumstance and the great number of flowers which it produces from each root, it is admirably adapted for forming a mass of yellow, in a flower-garden the beds of which make a geometrical figure. There were some beds of it in the nursery of Forrest and Black at Kensington, in the summer of 1839, which produced a splendid effect.

2.—SPHENOGYNE SPECIOSA, *Hort.* THE BEAUTIFUL SPHENOGYNE.

SYNONYME.—*S. versicolor*, *Dec.*

ENGRAVINGS.—*Flor. Cab.* vol. 2, p. 131; and our *fig. 10*, in Plate 31.

SPECIFIC CHARACTER.—Plant glabrous. Leaves pinnatifid, with linear segments. Pedicels elongated, nearly naked. Ray flowers numerous.

DESCRIPTION, &c.—This beautiful flower is easily distinguished from the preceding species, by the ray

florets being much more numerous, and each blotched at the base with a rich purplish-brown so as to form a ring inside the flower round the disk. When the florets of the ray fall, the same peculiarity is observable in the florets of the disk as was described in the preceding species, excepting that they are much less dry. The species is a native of the Cape of Good Hope, and was introduced about 1835. Its seeds are now common in the seed-shops, and they should be sown in February or March, covering them at night, if the weather should be cold, with a flower-pot or glass, when they will come into flower in May. Mr. Hopgood, of the Bayswater nursery, has some plants of this species still beautifully in flower this day, October 7th; though the specimen figured in our plate was gathered from one of the same plants early in May.

GENUS XVII.

OXYURA, *Dec.* THE OXYURA.*Lin. Syst.* SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Head of many flowers. Flowers of the ray ligulate, female. Flowers of the disk tubular, hermaphrodite, many of the central ones abortive. Involucral scales in one series, ciliated at the base, convolute, clasping the fruit of the rays; each terminated by a leafy appendage. Receptacle furnished with membranous paleæ. Fruit somewhat compressed, obovate, glabrous.

OXYURA CHRYSANTHEMOIDES, *Dec.* THE CHRYSANTHEMUM-LIKE OXYURA.ENGRAVINGS.—Bot. Reg. t. 1850; Botanist, No. 128; and our *fig.* 7, in Plate 31.

SPECIFIC CHARACTER.—Stem glabrous. Leaves alternate, ciliated, pinnatifid. Bractæas few, ciliated.

DESCRIPTION, &c.—This beautiful little plant is one of those which we owe to the exertions of poor Douglas, it having been sent home by him from California in 1835. It is quite hardy, and should be sown in March or April, when it will come into flower early in June. It does not, however, last long; and the seeds are generally ripe in July or August.

GENUS XVIII.

MADIA, *Mol.* THE MADIA.*Lin. Syst.* SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Flowers of the ray ligulate, female, and sometimes tubular; those of the disk tubular and hermaphrodite. Involucrum nearly globose, of one series of scales; scales keeled on the back, involving the acheniæ of the ray. Receptacle flat, bearing one or two series of paleæ between the ray and the disk. Fruit compressed, glabrous, 4 or 5-angled.

MADIA SATIVA, *Mol.* THE CULTIVATED MADIA.SYNONYMES.—*M. viscosa*, *Cav.*; *M. mellosa*, *Jacq.*

ENGRAVING.—Bot. Mag. t. 2574.

SPECIFIC CHARACTER.—Plant covered with glandular clammy hairs;

lower leaves opposite; upper ones alternate, oblong, entire, stem clasping. Heads on short petioles, disposed in racemes. Seeds oily.

DESCRIPTION, &c.—The plant is of no beauty; but we notice it on account of its having been lately cultivated on a large scale both in England and Germany, for the purpose of crushing the seeds for oil. In Germany, it has been cultivated near Stuttgart, and in England, in Norfolk, by Mr. Taylor; in both instances, the experiment has been attended with success. The plant is a native of Chili, whence it was introduced in 1794 by Archibald Menzies, Esq. In its native country this plant is celebrated for producing oil, and indeed the name of *Madia* is

said to signify oil-producing. When cultivated for oil in Europe, the seedlings are transplanted as soon as they unfold their second pair of leaves, into very rich soil, where they are planted ten inches or a foot apart. When the seeds begin to ripen, which is known by their turning black, the plants are reaped like corn, and set up to dry. They should, however, be thrashed out as soon as possible, as the succulent stems of the plants, if suffered to lie long, will begin to ferment, and would soon spoil the seeds. One acre of land in Germany sown with *Madia* will produce about 442 pounds of oil; while one acre sown with poppies, will produce only 264 pounds of oil, and the same quantity of land sown with rape only 240 pounds. The produce in England, however, is probably much less, on account of the comparative coldness of our summers.

GENUS XIX.

MADARIA, *Dec.* THE MADARIA.

Lin. Syst. SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Flowers of the ray ligulate, female; those of the disk tubular, male, or sterile. Involucrum nearly globose, torulose, of one series of scales. Scales complicate, involving the achenia of the ray. Receptacle rather convex, bearing one or two

series of scales between the ray and the disk, fringed or hairy in the centre. Achenia of the ray compressed, 4 or 5-angled, glabrous; those of the disk abortive.

DESCRIPTION, &c.—The plants composing this genus were, till lately, considered to belong to *Madia*, but they have been separated from that genus principally on account of the florets of the disk producing no achenia or fruit, and, consequently, no seeds. The name *Madaria*, is from *mados*, bald; in allusion to the fruit being devoid of pappus.

1.—MADARIA ELEGANS, *Dec.* THE ELEGANT MADARIA.

SYNONYME.—*Madia elegans*, *Don.* ? *Madia splendens*, *Hort.*

ENGRAVINGS.—Bot. Reg. t. 1453; Bot. Mag. t. 3348; and our fig. 3, in Plate 32.

SPECIFIC CHARACTER.—Plant covered with glandular clammy hairs, mixed with glandless bristles.

DESCRIPTION, &c.—A very strong and coarse-growing plant, from two to three feet high, with large woolly leaves. The flowers are produced in great abundance, and are very showy, the disk being surrounded by a distinctly-marked ring of brownish red. The plant is a native of California, whence it was sent home by Douglas in 1830. It will not bear either very hot weather or very rich soil, and Dr. Lindley, in the Bot. Reg., recommends it to be sown about June, so as not to come into flower till the heat of summer is passed. The reason for this, the doctor adds, is “that its flowers are so impatient of exposure to light, that they are scarcely expanded in bright sunshine, before they contract again, and the rays curl inwards, hiding the bright yellow and brown on which their beauty entirely depends.” We sowed it at Bayswater in April, and as our little garden is full of large trees, it did not appear to suffer from the heat, but blossomed splendidly. The only objection we had to it was its large size and excessively vigorous growth, which occasioned the destruction of all the finer and more delicate plants near it. It does not require either staking or thinning, as the thick strong stalks of the more vigorous plants will not only stand alone, but will overpower and destroy the weaker ones near them. The specimen figured in our plate was not a good one, as in general the ring of brownish-red is quite as conspicuous as in *Sphenogyne speciosa*, figured in Plate 31.

GENUS XX.

CALLICHROA, *Fisch. et Meyer.* THE CALLICHROA.*Lin. Syst.* SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Head heterogamous. Flowers of the ray female, ligulate, in two series; those of the disk tubular, hermaphrodite. Involucre double, of many nearly equal scales. Receptacle depressed, fringed, or furnished with two or three rows of paleae along the edge. Achenia somewhat fusiform: those of the ray glabrous, and a little compressed; those of the disk elongated, and somewhat truncate. Pappi setaceous, denticulate, in one series.

CALLICHROA PLATYGLOSSA, *Fisch. et Mey.* THE BROAD-RAYED CALLICHROA.ENGRAVINGS.—Sw. Brit. Flow. Gard. 2nd ser., t. 373; and our *fig.* 15, in Plate 31.

SPECIFIC CHARACTER.—Leaves alternate, sessile. Heads solitary, pedunculate; ray-flowers euneate.

DESCRIPTION, &c.—A very showy plant growing about a foot high, with slender branching stems, bearing a profusion of large golden-yellow flowers, with dark purple anthers to the flowers of the disk. The brilliant colour of these flowers gives the name to the genus; as *Callichroa* is derived from two Greek words signifying beautiful colour. The flowers do not look quite so well when gathered as when in the bed, from the stems and leaves being covered with rather long hairs; but this is only a trifling objection. The species is a native of the Russian colony of Ross in New California, whence it was first sent to the St. Petersburg Botanic Garden in 1835; but it was not introduced into England till 1837. It is quite hardy, and may be treated like the other Californian annuals (see p. 156), or sown in the open border in March or April. It is well adapted for forming a yellow bed in a geometrical flower garden. Though so recently introduced, it seeds so freely that it may already be purchased in most of the seed-shops. As it has a descending root, care should be taken in transplanting to keep as much earth as possible about the fibres, as when injured they are not so readily renewed as those of spreading-rooted plants.

GENUS XXI.

BAERIA, *Fisch. et Mey.* THE BAERIA.*Lin. Syst.* SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Head heterogamous, radiate. Scales of involucre about ten, equal, flat, and in two series. Receptacle conical, naked. Flowers of the disk hermaphrodite, tubular; those of the ray, female, ligulate, in one series. Fruit fusiform, compressed, somewhat tetragonal, obtuse, terminated by a small areola.

BAERIA CHRYSOSTOMA, *Fisch. et Mey.* THE GOLDEN-ANTHERED BAERIA.ENGRAVINGS.—Sw. Brit. Flow. Gard. 2nd ser., t. 395; and our *fig.* 13, in Plate 31.

SPECIFIC CHARACTER.—Plant slender, erect, branched, rather hairy. Leaves opposite, sessile, linear, quite entire. Heads terminal, solitary.

DESCRIPTION, &c.—This genus is nearly allied to that of *Callichroa*; and it is a native of the same place, having been sent to Europe at the same time. Though there are many botanical distinctions, the principal popular differences between the genera consist in the shape of the rays, which are pointed in *Baeria*, and wedge-shaped in *Callichroa*, and in the anthers of *Baeria* being all yellow. The genus was named in honour of Professor De Baer of the University of Dorpat. Though it was introduced at the same time as the *Callichroa*, yet from not seeding so freely, it is not included in any of the catalogues of the seed-shops, and we do not know where it is to be procured.

GENUS XXII.

CLADANTHUS, *Cass.* THE CLADANTHUS.*Lin. Syst.* SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Head heterogamous. Flowers of the ray ligulate, neuter; those of the disk tubular, hermaphrodite. Receptacle conical, paleaceous. Paleæ acute, mixed with threads. Involuerum in one series; scales scarious at top. Achenia compressed, glabrous.

DESCRIPTION, &c.—The species now comprised in this genus were formerly considered to belong to the same genus as the Chamomile, viz. *Anthemis*, but they have been separated on account of the shape of the receptacle, and the botanical construction, in some other particulars, being quite different.

CLADANTHUS ARABICUS, *Cass.* THE ARABIAN CHAMOMILE.

SYNONYMS.—*Anthemis arabica*, *Lin.*; *A. prolifera*, *Pers.*; *Chamæmelum proliferum*, *Mæuch*; *Asteriscus* sp. *Shaw*; *Cladanthus proliferus*, *Dec.*

ENGRAVING.—Our *fig.* 17, in Plate 31.

SPECIFIC CHARACTER.—Plant much branched, glabrous. Leaves pinnatifid, with trifid linear lobes. Heads, sessile and produced in the axils of the branches, and at the extremity of the stems.

DESCRIPTION, &c.—A pretty little flower, strongly resembling Chamomile in its leaves and general habit of growth. The stem is at first upright, but it is soon so weighed down by the profusion of its flowers, that it becomes prostrate. The flowers are produced not only at the extremity of the stems, but in the axils of all the branches; and hence the name, *Cladanthus* signifying a flowering branch. The plant is a native of Barbary, whence it was introduced by Dr. Shaw in 1759; but it was soon lost, and it was re-introduced in 1790, having been procured from Carlsruhe by Mr. Lee of the Hammersmith nursery. It is however quite hardy, and the only reason why it is difficult to keep, is the great length of time it takes to perfect its seeds. On this account, when it is grown for seed, it is generally sown the previous autumn. It is very ornamental, from its light chamomile-looking leaves, and profusion of bright yellow flowers. A great quantity of it to form a mass, was grown with very good effect in the summer of 1833, in Forrest and Black's nursery, Kensington. Seeds may be had in all the seed-shops; and when it is grown merely for its flowers, it is sown in March or April.

GENUS XXIII.

CHRYSANthemum, *L.* THE CHRYSANthemum.*Lin. Syst.* SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Heads heterogamous. Flowers of the ray in one series, female, ligulate; those of the disk tubular, hermaphrodite. Involuerum imbricated, campanulate, with scarious scales. Re-

ceptacle flat or convex, generally naked. Achenia of the ray triquetrous, or three winged; those of the disk compressed, or nearly cylindrical. Pappus wanting, or crown formed.

1.—CHRYSANthemum TRICOLOR, *And.* THE THREE-COLOURED CHRYSANthemum.

SYNONYMS.—*C. carinatum*, *Schous*; *Ismelia versicolor*, *Cass.*

ENGRAVINGS.—*Bot. Rep.* 2, t. 109; and our *fig.* 5, in plate 32.

SPECIFIC CHARACTER.—Glabrous. Stem erect, branched, diffuse.

Leaves pinnatifid, fleshy. Lobes linear, acute, toothed at top. Scales of involuerum keeled.

VARIETY.—*C. t. aurea*, *C. aurea*, *Hort.*; and our *fig.* 4, in Plate 32.

DESCRIPTION, &c.—A well-known garden flower; which, with its yellow variety, makes a splendid show in autumn. It is a native of Bombay, where it is found on the sandy banks of rivers. It was introduced in 1796, and at first kept in the greenhouse, but it was soon found quite hardy. The yellow-flowered variety was raised in 1799. Seeds of both species and variety are common in the seed-shops; the latter being generally called the new Golden. The word *Chrysanthemum* signifies golden flower.

2.—CHRYSANthemum VISCOSUM, Desf. THE CLAMMY CHRYSANthemum.

SYNONYMS.—*Centrospermum Chrysanthemum*, Spreng.; *Heteranthemis viscido-hirta*, Schott; *Pinordia anisocephala*, Cass.

SPECIFIC CHARACTER.—Plant covered with clammy down. Leaves

rather fleshy; lower ones half stem-clasping, oblong, somewhat pinnatifid; upper ones cordately stem-clasping, toothed; each tooth terminated by an acute rigid point. Heads terminal, solitary.

DESCRIPTION, &c.—A native of the south of Spain, and also of the sandy plains near Algiers. It is a dwarf plant with heads of yellow flowers, introduced in 1823. The seeds may be purchased at Charlwood's; and they should be sown in March or April, in a warm dry border, and rather sandy soil. Its common name in the seed-shops is *Centrospermum Chrysanthemum*; *Centrospermum* signifying a spur-shaped seed.

3.—CHRYSANthemum CORONARIUM, Lin. THE GARLAND-FLOWERED CHRYSANthemum.

SYNONYMS.—*Chrysanthemum segetum*, Forsk.; *Matricaria coronaria*, Desr.

SPECIFIC CHARACTER.—Glabrous. Stem erect, diffused, branched.

Leaves auriculate stem-clasping, bipinnatifid; lobes lanceolate, dilated at the apex, deeply serrated. Scales of involucre scarious at the apex.

DESCRIPTION, &c.—There are several varieties of this species grown in gardens; the double white, the yellow, and the quilled, are, however, the most common. They are all ornamental, from the great profusion of their flowers, which make the plants of the white variety almost like bushes covered with clusters of large double-flowered cherry blossoms. The species is a native of the south of Europe, and north of Africa; and it was introduced before 1629. The seeds are common in all the seed-shops; and they may either be sown in the open border in April or May, or raised on a slight hot-bed, and planted out in the latter month. They should, in fact, be treated like the French marigold; but will require staking and tying up. This and all the common plants which have been for many years raised every season on slight hot-beds, may be grown equally well in the open border, by watering them every morning with warm water; and turning a flower-pot over them during cold nights, while they are yet young.

4.—CHRYSANthemum ROXBURGHII, Desf. DR. ROXBURGH'S CHRYSANthemum, OR THE EAST INDIAN FEVERFEW.

SYNONYMS.—*Pyrethrum indicum*, Roxb.; *Glebionis Roxburghii*, Cass.; *Chrysanthemum senecoides*, Dunal; *Matricaria oleracea*, Ham.; *Pinordia Roxburghii*, Less.

ENGRAVING.—Bot. Mag. t. 1521.

SPECIFIC CHARACTER.—Glabrous. Stem erect, cylindrical, branched. Leaves auriculate stem-clasping, pinnatifid. Lobes entire or toothed.

Involucre campanulate, having the inner scales each drawn out into a roundish scarious appendage.

VARIETIES.—C. R. 2 *breviradiatum*, Dec.; C. *breviradiatum*, Ledebour; Flowers with a short ray. Introduced in 1818.

C. R. 3 *radiatum*, Dec.; flowers with a long ray.

DESCRIPTION, &c.—The species is a very singular flower with no disk, well known in our gardens under the name of *Pyrethrum indicum*. It is a native of the East Indies; whence the seeds were sent by Dr. Roxburgh to Mr. Lambert in 1810. Seeds may be purchased in any of the seed-shops, under the name of *Pyrethrum indicum*. The culture of the plant is the same as that of *C. coronarium*, except that it does not require either staking or tying up.

5.—CHRYSANthemum SEGETUM, Lin. THE CORN MARIGOLD OR YELLOW OX-EYE.

SYNONYMS.—*Pyrethrum segetum*, Mæch.

ENGRAVINGS.—Eng. Bot. t. 540, 2nd. edit. vol. 6, t. 1172.

SPECIFIC CHARACTER.—Glabrous. Stem erect, branched. Leaves

stem-clasping; some coarsely serrated, others lacinated. Branches naked near the apex, one-headed. Scales of the involucre obtuse at the apex, and scarious.

DESCRIPTION, &c.—If this beautiful flower were rare, and difficult to be cultivated, it would be highly valued; but being a common English weed, few persons notice it except the farmers, and they wage war against it. It is particularly abundant in corn-fields, where the soil is sandy; and in such situations, it is very difficult

to eradicate it. The flowers are large, and of a golden yellow ; and the peduncles are naked, and thickened at the apex, like those of the African marigold. When cultivated in a garden, the seed only requires to be sown in a dry sandy soil, in March or April.

GENUS XXIV.

DIMORPHOTHECA, *Vaill.* THE CAPE MARIGOLD.

Lin. Syst. SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Heads radiate. Flowers of the ray female, ligulate ; those of the disk tubular, hermaphrodite, centre ones abortive. Involucrum in one series. Receptacle flat, naked or paleaceous.

Achenia naked ; those of the ray obconical, somewhat triquetrous, and tuberculated ; those of the disk flat and winged.

DESCRIPTION, &c.—The species now composing this genus, were at first supposed to belong to *Calendula*, the common Marigold ; but according to the new arrangement of the Compositæ, they not only form a different genus, but are actually placed in another tribe : the Cape Marigolds being included in the *Senecionideæ*, or radiate-flowered tribe, and the common Marigolds being placed in the *Cynarææ* or artichoke-flowered tribe.

1.—DIMORPHOTHECA PLUVIALIS, *Manch.* THE GREAT CAPE MARIGOLD.

SYNONYMS.—*Calendula pluvialis*, *Linn.* ; *C. hybrida*, *Swt.* ; *C. scabra*, and *C. decurrens*, *Thunb.* ; *Meteorina gracilipes*, *Cass.*

ENGRAVINGS.—*Swt. Brit. Flow. Gard.* t. 39 ; and our *fig.* 4 in Plate 31, under the name of *Calendula pluvialis*.

SPECIFIC CHARACTER.—Stem branched, leafy. Leaves narrow, lanceolate, toothed. Peduncles cylindrical. Fruit glabrous ; outer ones tuberculated.

DESCRIPTION, &c.—This very curious species has the florets of its ray of a pure white, shaded with a violet colour at the base, inside the flower-head, but of a dark purple on the outside. The flower closes in rainy weather, and hence the specific name *pluvialis*, which signifies showery ; it also closes at sunset, and, in fact, only opens to the sun-beams. It is one of those flowers, the footstalk of which stands erect while the flower is likewise expanded, but droops during the fading of the florets, though it again erects itself when the seeds are ripe. The name of *Dimorphotheca* is Greek, and signifies two forms in one sheath.

This species is a native of the Cape of Good Hope, whence it was introduced before 1726, as in that year it was grown by Miller in the Chelsea Botanic Garden. There is a variety with lyrate leaves, and another with the backs of the ray florets of a dark brownish orange, instead of purple. The culture of this plant requires a little attention, as, though it is quite hardy, and does not succeed well if raised on a hot-bed, it is very liable to be injured by spring frosts. For this reason it should be sown in the open border, about the latter end of April or beginning of May ; only four or five seeds in a patch, or if to cover a bed, very sparingly, as it will not bear transplanting. It requires no other culture but watering and keeping it free from weeds ; and as it is of low growth, and covered with flowers, it is very suitable for filling a bed in a geometrical flower-garden, where it will form a white bed in sunshine, and a dark purple one in gloomy weather.

2.—DIMORPHOTHECA HYBRIDA, *Dec.* THE HYBRID CAPE MARIGOLD.

SYNONYMS.—*D. incrassata*, *Manch.* ; *Meteorina crassipes*, *Cass.* ; *Calendula hybrida*, *Linn.*

SPECIFIC CHARACTER.—Stem branched, scabrous, leafy. Leaves

oblong, linear ; radical ones sinuated, cauline ones toothed. Peduncles thickened at top. Fruit glabrous, toothed on the angles.

DESCRIPTION, &c.—Closely resembling the preceding species ; but with rather smaller flowers, and differently shaped seeds. The species figured under the name of *Calendula hybrida* in Sweet, is, according to De Candolle, *D. pluvialis*. The culture is the same as that of the great Cape Marigold.

GENUS XXV.

COTULA, *Lin.* THE COTULA.*Lin. Syst.* SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Head discoid, heterogamous. Flowers of the ray in one series, apetalous, female, those of the disk hermaphrodite, having the tube a little compressed, and usually bicalcarate at the base, and the limb with four crenatures. Receptacle flat, bractless, bearing distinct papillæ after the falling of the fruit, which are probably nothing but the remains of the pedicels. Achenia compressed, marginate, without pappus, glabrous; those of the ray stipulate, and those of the disk sessile and narrower.

1.—COTULA AUREA, *Lin.* THE GOLDEN COTULA.

SYNONYMES.—*Anacylus aureus*, *Lam.*

SPECIFIC CHARACTER.—Glabrous. Stem ascending. Leaves half stem-clasping, with a linear rachis, and very slender, acuminate,

parted, or undivided lobes; heads terminal, the peduncles scarcely rising above the ultimate leaf.

DESCRIPTION, &c.—A curious little flower, the heads of which look like small golden balls. A native of Spain, introduced in 1818, and now common in the nurseries. The seeds only require scattering on the ground in March or April, and the plants need no other culture.

GENUS XXVI.

LONAS, *Adan.* THE ANNUAL ATHANASIA.*Lin. Syst.* SYNGENESIA ÆQUALIS.

GENERIC CHARACTER.—Head discoid, homogamous. Receptacle conical, elongated, paleaceous. Involucreum campanulate, scales imbricated. Achenia angular, furnished with a gland on one side at the apex. Pappus obliquely crown-formed, membranous, entire.

1.—LONAS INODORA, *Gærtn.* THE SCENTLESS LONAS, OR ANNUAL ATHANASIA.

SYNONYMES.—*Athanasia annua*, *Lin.*; *Achillea inodora*, *Lin.*; *Lonas minima*, *Cass.*; *Elichrysium inodorum*, *Magn.*; *Bellis africana*, *Moris.*; *Santolina africana*, *Tourn.*; *Ageratum africanum*, *Ray.*

ENGRAVINGS.—*Bot. Mag.* t. 2276; and our *fig. 8* in Plate 31, under the name of *Athanasia annua*.

SPECIFIC CHARACTER.—Plant glabrous. Leaves pinnatifid. Lobes acuminate. Heads of flowers disposed in cymous umbels.

DESCRIPTION, &c.—A rambling plant, remarkably untidy in its appearance, from its widely-spreading jagged leaves, and the long naked footstalks of its flowers. The flowers themselves have nothing to recommend them, except the great length of time that they remain unfaded when cut. This quality, and the great length of the footstalk, made this flower a favourite about a century ago, when it was the fashion to set large beaupots filled with flowers in the chimney-places during summer. The name of *Athanasia*, which signifies never-dying, alludes to the length of time that the flowers will remain unfaded; and this is so great, that Ray, who first cultivated the plant in England, states that some flowers which expanded with him in the beginning of July, were in full vigour at the time he was then writing, the twentieth of October. The species is a native of Barbary, and was introduced before 1686. The seeds are common in the seed-shops; and they should be sown in April or May, in a warm, dry, sandy, border. The name of *Lonas* is one of those invented by Adanson, author of the *Familles des Plantes*; and like all his botanic names, it has no meaning.

GENUS XXVII.

AMMOBIUM, *R. Br.* THE AMMOBIUM.*Lin. Syst.* SYNGENESIA ÆQUALIS.

GENERIC CHARACTER.—Head homogamous. Receptacle broad, conical, furnished with oblong, acuminate, denticulated paleæ. Involuerum hemispherical. Scales imbricated, coriaceous, with membranous margins, each terminated by a scarious, convex, spreading appendage. Corollas tubular, five-lobed. Anthers bisetaceous at the base. Stigmas pilose at the apex. Achenia or fruit somewhat compressed, tetragonal, 4-toothed at the apex; the two larger teeth drawn out into two bristles.

1.—AMMOBIUM ALATUM, *R. Br.* THE WINGED-STALKED AMMOBIUM.ENGRAVINGS.—Bot. Mag. t. 2459, and our *fig. 9*, in Plate 33.

SPECIFIC CHARACTER.—Plant erect, branched, canescent. Radical leaves oblong, on long petioles. Cauline leaves running along the stem. Involuerum white.

DESCRIPTION, &c.—A kind of everlasting flower, discovered near the shores of the Hunter River in New South Wales in 1804, by Dr. Brown, who gave it the name of *Ammobium*, or sand-flower, because he discovered it growing in pure sand. It was not introduced till 1822, and was at first supposed to be a perennial, but it is now found to be an annual. Seeds may be had at Forest and Black's, and other seed-shops, and they only require sowing in the open border in March and April. The plants remain a long time in flower.

GENUS XXVIII.

RHODANTHE, *Lindl.* THE RHODANTHE.*Lin. Syst.* SYNGENESIA ÆQUALIS.

GENERIC CHARACTER.—Head homogamous. Involuerum turbinate, imbricated. Scales membranous, ovate, acute; outer ones silvery, bractæform; middle ones adpressed; uppermost ones spreading, rose-coloured. Receptacle naked. Corolla 5-cleft. Achenia bidentate, woolly. Pappus in one series, plumose.

1.—RHODANTHE MANGLESII, *Lindl.* CAPTAIN MANGLES' RHODANTHE.ENGRAVINGS.—Bot. Reg. t. 1703; Bot. Mag. t. 3483; Swt. Brit. Flow. Gard. 2nd Ser. t. 295; and our *figs. 1 and 3*, in Plate 34.

SPECIFIC CHARACTER.—Plant erect, branched, glabrous. Leaves oblong, obtuse, entire, stem-clasping. Heads terminal, solitary.

DESCRIPTION, &c.—One of the most beautiful plants ever introduced. The beautiful silvery hue of the lower scales of the involuerum, the fine rose-colour of those immediately surrounding the disk, which may be said to form the ray of the flower, and the golden yellow of the florets of the disk, form a striking combination of beauties unequalled perhaps in any other flower. The Rhodanthe is a native of the Swan River colony in New South Wales; whence seeds of it were brought in 1834 by our excellent friend Captain Mangles, who has done so much for floriculture in various ways. Had the Captain, however, never introduced anything but the Rhodanthe, he would well have merited the gratitude of all lovers of flowers. The derivation of the name of Rhodanthe is stated by Sir W. J. Hooker to be from two Greek words, signifying "rose-flower." We think, however, that the name has probably a much more poetical origin, and that the flower must have been christened after Rhodanthe, a queen of Corinth, who was so beautiful, that her subjects were never weary of looking at her. This lady, disliking so much admiration, hid herself in a temple dedicated to Diana and Apollo; and when forced by the cries and repeated acclamations of her subjects, who actually besieged the temple, to present herself to their gaze, she was so modest that she blushed herself to death. The whole story is told



1 2 3 *Rhodanthe Manglicui*. — 4. *Morina nitida*. — 5. *Morina nivea*. — 6. *Helichrysum bicolor*.
 7. *Helichrysum macranthum*. — 8. *Helichrysum bracteatum*. — 9. *Xeranthemum annuum*.
 10. *Xeranthemum annuum* var. *album*.

in a Latin poem, entitled "The Gardens," written by a French author, named Rapin, a century or two ago. Rapin adds, that Rhodanthe, after her death, was changed by the pitying Apollo into a rose, of which some of the troublesome crowd became the thorns; while a few of the most persevering were changed into grubs, caterpillars, bees, and butterflies, which still haunt the rose in admiration of her beauty.

The ordinary culture of the Rhodanthe is simply sowing it with other half hardy annuals on a hotbed in February, and planting it out in May; but we have a most magnificent plant, presented to us by Captain Mangles himself, which was raised in Henderson's Nursery, Pine Apple Place, Edgeware Road, by his foreman Mr. Goode, and treated in the following manner. The seed was sown April the 5th, in pots filled with three parts peat or rather heath-mould, and one of loam. In the first week of May, when the plants were still in the seed-leaf, they were pricked out into small thumb pots, or sixties. In a week's time they were shifted into rather larger pots; and this shifting was repeated six times, always into rather larger pots, till the middle of August, when the plants were in pots No. 16, and when they were first allowed to flower. On the fourteenth of September, when one of these plants was sent to us by Captain Mangles, it was one and a half feet high, above four feet in circumference, and had a thousand expanded flowers upon it besides innumerable buds, which have continued expanding ever since; and it is still (November 1) a blaze of beauty. It is watered every morning with a little warm water; and the dead flowers are cut off as they fade. "The great art," says Mr. Goode, in the MS. directions, sent us by Captain Mangles, "is to prevent the plant from growing upwards, and to cause it to increase and expand in breadth instead of length." To do this, all that is required is "to watch it well, and the moment the roots have nearly filled the pot, to transplant it into a larger one. By constantly attending to this, the plants will grow thick and shrubby in their character; and while the shoots will be strong and able of bearing a most profuse floration, the beauty of the plants in shape will be very greatly improved." Seeds of the *Rhodanthe Manglesii* are common in all the seed-shops.

GENUS XXIX.

MORNA, *Lindl.* THE MORNA.

Lin. Syst. SYNGENESIA ÆQUALIS.

<p>GENERIC CHARACTER.—Head homogamous. Receptacle flat, naked. Involucral scales in many series, dry, coloured, imbricated, petiolate. Anthers bicalcarate at the base. Achenia glabrous, compressed, beaked.</p>	<p>Pappus scabrous, in one series, setaceous, equal, and pubescent at the base.</p>
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1.—MORNA NITIDA, *Lindl.* THE SHINING MORNA.

<p>ENGRAVINGS.—Bot. Reg. t. 1941; and our <i>fig.</i> 4, in Plate 34.</p>	<p>rather broadest at the base; mucronate, pubescent. Involucral scales yellow, acute, serrulated.</p>
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DESCRIPTION, &c.—A beautiful everlasting flower, with, as Dr. Lindley describes it, "starry heads of a most rich and transparent yellow, having quite a metallie brilliancy when illuminated by the sun." It was named by Dr. Lindley after "Morna, one of the heroines of the Northern romances, who was a beautiful lady, confined in a golden hall, guarded by a thousand golden lanes, and attended night and day by knights, whose sole office was to do her bidding in all things, except allowing her to escape from her splendid thraldom." *Morna nitida* is a native of the sandy country near the Swan River, whence seeds of it were sent home by Sir James Stirling in 1835. Seeds may be had at Charlwood's, and other seed-shops. They should be sown in pots of peat and

leaf-mould with a little sand, in February, and transplanted into other pots, as they require shifting; in the same manner as was directed for the *Rhodanthe*, till the end of May or beginning of June, when they may be planted in the open border. Thus treated they will not flower before August or September; but if sown in September, and kept in the greenhouse all winter, they will flower in the following May or June. In this case they may be turned into the open border in April, but it should be without breaking the ball of earth in the pot; and the plants should be kept covered with a hand-glass, particularly at night, till the beginning of June.

2.—MORNA NIVEA, *Lindl.* THE SNOWY MORNA.

ENGRAVINGS.—Bot. Reg. for 1838, t. 9; and our *fig.* 5, in Plate 34.

SPECIFIC CHARACTER.—Stem pilose, corymbose, rather woolly at the base. Leaves linear, obtuse or acute. Involucral scales white, quite entire.

DESCRIPTION, &c.—If the yellow Morna resembled the enchanted nymph of the Scandinavian Romance sitting in her golden hall, and surrounded by the golden lances of her knights; this white Morna may be compared to Ossian's heroine of the same name, who was fair as "the snow upon the heath," with yellow hair, "like the mist of Cromla, when it curls upon the rocks, and shines in the beam of the west." The involucral scales of this species are white, shining like silver, and surrounding a golden yellow disk. It is a native of the Swan River colony, introduced in 1837; and in its durability and culture it exactly resembles *M. nitida*. Both species are very difficult to grow; and Dr. Lindley observes that "in a greenhouse they require particular attention, as too much or too little watering will in a few hours destroy the healthiest plants." When turned into the open border, a pit, at least a foot deep, and a foot in diameter, should be dug, and filled with equal parts of peat, vegetable mould (decayed leaves), and river sand; and into the centre of this the ball of earth contained in the pot should be planted, without breaking it or disturbing the roots of the plant in the slightest degree. The plant should then be very slightly watered with warm water, and covered with a hand-glass for a few days; putting the glass on again every night, even after the plant is well established, as long as there is the slightest danger of frost. As different kinds of earth are necessary for the culture of this plant, it may perhaps be here useful to mention for the benefit of those who have no gardener, that peat, vegetable mould, and sand may be purchased in small quantities (sixpennyworth or a shillingworth, for example) of most of the London nurserymen.

GENUS XXX.

PODOLEPIS, *Labill.* THE PODOLEPIS.

Lin. Syst. SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Head heterogamous. Flowers of the ray female, ligulate, or nearly tubular; those of the disk hermaphrodite and tubular. Receptacle paleaceous. Involucrum campanulate, of many series of scales. Outer scales sessile, diaphanous; inner ones stipitate.

Anthers setiferous at the base. Achenia oblong, with a lateral areola. Pappus in one series; the setæ scarious, and rather combined at the base.

1.—PODOLEPIS GRACILIS, *Graham.* THE SLENDER-STALKED PODOLEPIS.

SYNONYME.—*Stylolepis gracilis*, *Leb.*

ENGRAVINGS.—Swt. Brit. Flow. Gard. t. 285; Bot. Mag. t. 2904; and our *fig.* 2, in Plate 34, where it is erroneously referred to, as one of the specimens of *Rhodanthe Manglesii*.

SPECIFIC CHARACTER.—Plant glabrous, branched. Cauline leaves auricled, the auricles adnate to the stem. Scales of involucrum obtuse, glandular along the stipe.

DESCRIPTION, &c.—A very elegant little plant, which though a true annual, is quite woody at the base of the stem. The flowers are generally of a pinkish lilac, but there is a variety nearly white. It is a native of the

sandy plains, near King George's Sound, and was introduced in 1827. The seeds, which may be purchased in any seed-shop, may either be sown on a hotbed in February and planted out in May, or sown in April or May in the open border; or the plant may be grown in pots as directed for *Rhodanthe Manglesii*, when it will attain an enormous size.

GENUS XXXI.

HELICHRYSUM, *Vaill.* THE EVERLASTING FLOWER.*Lin. Syst.* SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Head homogamous, having all the flowers tubular and hermaphrodite, or heterogamous with the ray-flowers in one series, slender, and a very few of them female. Involucrum imbricated, with scarious scales. Receptacle flat, naked or honeycombed, or fringed. Achenia beakless, sessile. Pappus in one series, bristles scabrous, free, or combined at the base.

DESCRIPTION, &c.—The everlasting flowers were formerly nearly all classed with those of the genus *Gnaphalium* or eudweed; from which they differ essentially in wanting the woolly herbage from which the genus *Gnaphalium* takes its name. Most of these are now called *Helichrysum*, sometimes erroneously spelt *Elichrysum*, as it is derived from *Helios*, the sun, and *chryson*, gold. The common Everlasting-flower, which is so much sold in Paris under the name of *Immortelle*, and which Linnæus called *Gnaphalium orientale*, is now found to belong to *Helichrysum*.

1.—HELICHRYSUM BRACTEATUM, *Willd.* THE BRACTEATED, OR LARGE GOLDEN EVERLASTING.

SYNONYMS.—*Xeranthemum lucidum*, *Hænk.*; *Elichrysum bracteatum*, *Vent.*; *Helichrysum chrysanthemum*, *Pers.*

ENGRAVINGS.—Bot. Rep. t. 375; and our *fig.* 8, in Plate 34.

SPECIFIC CHARACTER.—Plant erect, branched, rather scabrous. Leaves lanceolate, repand, acuminate. Heads terminal, furnished

with from 1 to 3 foliaceous bractæas. Involucral scales glabrous, radiant.

VARIETIES.—Professor De Caudolle mentions three, but only the following is known in British gardens: *H. b. 2 albidum*, *Dec.* The involucral scales which form the ray are white, with a golden yellow disk.

DESCRIPTION, &c.—A very handsome Everlasting-flower, with bright yellow golden-looking scales, which have quite a metallic lustre in the sun. It is a native of the eastern and central parts of New Holland, whence it was sent home in 1799. Seeds are common in the seed-shops under the names of *Xeranthemum lucidum* and *Elichrysum bracteatum*, and they are generally sown on a hotbed in February or March, to plant out in May. They will, however, do very well if sown in the open border in April or May; and in sheltered situations if allowed to sow themselves, the young plants will live through the winter uninjured. The flowers when gathered will keep for several years without undergoing any change.

2.—HELICHRYSUM BICOLOR, *Lindl.* THE TWO-COLOURED HELICHRYSUM.

ENGRAVINGS.—Bot. Reg. t. 1814; and our *fig.* 6, in Plate 34.

SPECIFIC CHARACTER.—Stem furrowed, branched. Leaves linear-

lanceolate; lower ones obtuse at the base, ciliated; upper ones subulate. Involucral scales acute.

DESCRIPTION, &c.—This species, which differs very little in general appearance from *H. bracteatum*, derives its name of *H. bicolor* from a slight copper-coloured tinge on the tips of the outer series of involucral scales. It is a native of Van Diemen's Land, and quite hardy; but we do not know where seeds are now to be procured. It was however introduced by Mr. Low of the Clapton nursery in 1835, and probably seeds may still be purchased there.

3.—*HELICHRYSUM MACRANTHUM*, *Benth.* THE LARGE-FLOWERED *HELICHRYSUM*.

ENGRAVINGS.—Bot. Reg. for 1833, t. 58; Botanist No. 92; and our *fig.* 7, in Plate 34.

SPECIFIC CHARACTER.—Stem erect, scabrous. Leaves oblong-lanceo-

late, or lower ones spatulate, obtuse, and quite entire, stem-clasping at the base, and rather scabrous. Involucral scales radiant, ovate, obtuse, mucronate.

DESCRIPTION, &c.—A very beautiful flower, the involucral scales of which are white, tipped with pink. It is a native of the Swan River colony, and was introduced in 1837. It is quite hardy and robust-growing; and we saw it flowering luxuriantly in the open ground in the nursery of Mr. Rogers in Eaton Square. Seeds of it are to be procured at Kernan's, James Street, Covent Garden, and other seed-shops. The seeds may either be sown in the open ground in March or April, or brought forward on a hotbed, and planted out in May; the principal advantage in the latter case being that the plants will flower sooner. The soil should be composed of peat, sand, and leaf mould, and it should be thoroughly well drained.

GENUS XXXII.

CACALIA, *Lin.* THE *CACALIA*.

Lin. Syst. SYNGENESIA *ÆQUALIS*.

GENERIC CHARACTER.—Heads homogamous. Flowers all tubular, five-lobed, lobes linear, elongated. Receptacle flat. Involucrum ovate, cylindrical, in one series. Scales linear, and at length reflexed. Branches

of the style terminated by a short hispid cone. Achenia oblong, pentagonal, angles hispid. Pappus in many series.

1.—*CACALIA COCCINEA*, *Curt.* THE SCARLET *CACALIA*.

SYNONYMS.—*Emilia sagittata*, *Dec.*; *E. flammea*, *Cass.*; *Cacalia sagittata*, *Vahl.*; *C. sonchifolia*, *Hort.*

ENGRAVINGS.—Bot. Mag. t. 564; and our *fig.* 2, in Plate 31.

SPECIFIC CHARACTER.—Stem erect, a little branched. Lower

cauline leaves spatulate, narrowed at the base, the rest sagittate, stem-clasping, and minutely toothed. Heads disposed in terminal corymbs, outer florets of the head curved.

DESCRIPTION, &c.—A very curious plant with bright scarlet flowers. Its stalks, which are very slender, grow two or three feet high, and require support. It is a native of the East Indies, and the Philippine Islands. It was introduced in 1800; and the seeds, which may be had in any seed-shop, may either be sown in a hot-bed, or in the open air in April.

GENUS XXXIII.

SENECIO, *Less.* THE GROUNDSEL.

Lin. Syst. SYNGENESIA *SUPERFLUA*.

GENERIC CHARACTER.—Head discoid or heterogamous. Flowers of the ray ligulate, female. Involucrum in one series, naked or calyculate.

Receptacle naked, or honeycombed. Styles of the hermaphrodite flowers pencilled. Achenia beakless. Pappus pilose, in many series, caducous.

DESCRIPTION, &c.—This genus perhaps contains more plants than any other of the *Compositæ*; but most of them are common and insignificant weeds. Some are, however, showy flowers; as, for example, the purple *Jacobæa*.

1.—*SENECIO ELEGANS*, *Thun.* THE *JACOBÆA*, OR PURPLE RAGWORT.

SYNONYMS.—*S. pseudo-elegans*, *Less.*; *Jacobæa elegans*, *Manch.*

ENGRAVINGS.—Bot. Mag. t. 238; and our *fig.* 9, Plate 32.

SPECIFIC CHARACTER.—Erect, much branched. Leaves pinnatifid, lobes ovate, obtuse, bluntly toothed; terminal lobe roundish, or a

little rounder than the rest. Heads disposed in sub-racemous corymbs. Involucrum calyculated with foliaceous scales.

VARIETIES.—The double purple is the most common; but there are also several of a paler shade, and some almost white.

DESCRIPTION, &c.—The double purple *Jacobæa*, is a beautiful and very favourite flower; and though it is not so handsome in its single state, it is still very pretty, and deserving of cultivation. There are several varieties;

and one, of a beautiful blush colour, and very double, which we saw in the Lewisham nursery, in the summer of 1838, struck us particularly. The species is a native of the Cape of Good Hope, and was introduced in 1700, by Charles Dubois, Esq., one of the patrons of gardening in the time of Peter Collinson. The culture of the *Jacobæa* is exactly the same as that of other tender annuals; viz., it must be raised on a hot-bed, and planted out in May; but it is best for the possessor of a small garden, to purchase half a dozen or a dozen plants in that month from a nurseryman, and to plant them singly, or three together, in holes prepared for the purpose, and filled with a mixture of peat earth, or heath mould, and loam. When first planted they should be shaded for a day or two; and covered every night with a flower-pot turned over them for a week or fortnight. If the weather be dry, they should be watered every day slightly with warm water; and thus treated, they will make magnificent plants.

2.—*SENECIO TUSSILAGINIS*, Less. THE COLTSFOOT-LEAVED RAGWORT.

SYNONYMS.—*Cineraria tussilaginis*, *L'Herit.*; *Pericallis tussilaginis*, *D. Don*.

ENGRAVINGS.—Bot. Reg. t. 1550; Swt. Brit. Flow. Gard. t. 228; and our *fig.* 10, in Plate 32.

SPECIFIC CHARACTER.—Petioles auriculatedly cordate at the base, the rest naked. Leaves reniformly cordate, angled, toothed, clothed with hoary tomentum beneath. Heads disposed in panicled corymbs. Scales of involucre glabrous, striated.

DESCRIPTION, &c.—A handsome plant with star-like flowers, strongly resembling those of the genus *Cineraria*. A native of Teneriffe, introduced in 1831. The culture is the same as that of *Senecio elegans*.

GENUS XXXIV.

ZINNIA, *Lin.* THE ZINNIA.

Lin. Syst. SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Head radiate. Flowers of the ray female, ligulate, those of the disk tubular, hermaphrodite. Involucre imbricated, scales ovate, roundish, margined with black. Receptacle conical or cylindrical. Paleæ oblong, complicated, involving the flowers of

the disk. Achenia corticate, membranous, and a little winged; those of the ray somewhat tetragonal; outer ones of the disk also somewhat tetragonal, but inner ones compressed, and furnished with one or two awns at the apex, bidentated, or mutic.

DESCRIPTION, &c.—This genus was named by Linnæus, in honour of Professor Zinn, the pupil and successor of Haller at the University of Gottingen; and it consists of a number of very showy Mexican annuals, which require to be raised on a hot-bed, and not planted out in the open air till May. Zinnia is indeed one of those annuals which will not succeed when sown in the open air; as a certain degree of heat and moisture appears necessary to make the seeds vegetate. There are numerous species; all with splendid flowers, and highly worthy of cultivation.

1.—*ZINNIA REVOLUTA*, Cav. THE REVOLUTE-FLOWERED ZINNIA.

SYNONYME.—*Z. tenuiflora*, *Jacq.*

ENGRAVINGS.—Bot. Mag. t. 555; and our *fig.* 1, in Plate 35.

SPECIFIC CHARACTER.—Stem erect. Leaves on short petioles, cor-

date-lanceolate. Peduncles long, cylindrical. Involucral scales adpressed. Ligulæ linear-oblong, usually revolute. Paleæ of receptacle quite entire. Achenia of the disk each furnished with one awn.

DESCRIPTION, &c.—This species is less showy than any of the other Zinnias; but it is curious from the claw-like curving of its ray florets, and their brilliant colour. It grows two or three feet high, and divides into several branches. It has been only found in Mexico, and was introduced about the year 1800. The seeds, which are common in the seed-shops, should be sown on a hot-bed in February, and planted out about the middle of May; or in cold situations, not till June.

2.—ZINNIA VERTICILLATA, *Andr.* THE WHORL-LEAVED ZINNIA.SYNONYME.—*Z. hybrida*, *Hort.*ENGRAVINGS.—Bot. Rep. 3, t. 189; and our *fig.* 4, in Plate 35.

SPECIFIC CHARACTER.—Stem erect, rather hairy. Leaves oblong-lanceolate, sometimes crowded in a verticillate manner, and sometimes

placed spirally. Peduncles short, obconical, hollow, and striated. Involucrum campanulate, with adpressed scales. Ligulæ obovate, emarginate at the apex, usually in two or three series. Paleæ of receptacle quite entire, acutish. Achenia of the disk furnished with one awn.

DESCRIPTION, &c.—This species of *Zinnia* affords a striking contrast to the last, in the shape of the flower, and in the number and disposition of the florets of the ray. It is also very strongly marked by the whorl of leaves at the base of the peduncle, and by its thickened apex. It is a native of Mexico; and was introduced in 1789. Its culture is the same as that of *Z. revoluta*.

3.—ZINNIA MULTIFLORA. THE MANY-FLOWERED ZINNIA.

ENGRAVING.—Bot. Mag. t. 149.

SPECIFIC CHARACTER.—Stem erect, branched, rather hairy. Leaves scarcely petiolate, ovate-lanceolate. Petioles obconical, hollow, and striated. Involucrum campanulate, with adpressed scales. Ligulæ

obovate, obtuse, or emarginate. Paleæ of receptacle quite entire, obtuse. Achenia of the disk furnished with one awn.

VARIETY.—*Z. m. 2. lutea*, our *fig.* 9, in Plate 35; *Z. pauciflora*, *Lin.*; *Z. lutea*, *Gærtn.*; ? *Z. m. 2 flava*, *Kunth.* Flowers yellow, or pale orange.

DESCRIPTION, &c.—The flowers of the species are scarlet, and those of the variety yellow; but they differ very little in any other respect. They have both been common in British gardens since 1770, and require the same treatment as the other species of the genus. *Z. multiflora* was sent to England from Louisiana, of which country it is a native; but it is also found wild in Brazil, Mexico, and the Mauritius.

4.—ZINNIA HYBRIDA, *R. et Pav.* THE HYBRID ZINNIA.SYNONYMES.—*Z. grandiflora*, *Hort.*ENGRAVINGS.—Bot. Mag. t. 2123, and our *fig.* 2, in Plate 35, under the name of *Z. grandiflora*.

SPECIFIC CHARACTER.—Stem erect, pubescent. Leaves cordate-lanceolate, sessile, stem-clasping. Peduncles terminal, solitary, short, obconical, hollow. Involucral scales adpressed. Paleæ of receptacle acute, entire. Achenia bidentately-awned.

DESCRIPTION, &c.—This species is supposed to be a hybrid, between *Z. elegans* and *Z. multiflora*; and it has, indeed, the large flower of the one species, and the conical disk of the other. It is not, however, a very desirable species to grow, on account of the dull dingy colour of the flowers. It is a native of South America, where it was discovered by Ruiz and Pavon, and described by them. It was introduced in 1818; and its culture is the same as that of the other species.

5.—ZINNIA SULPHUREA, *Hort.* THE SULPHUR-COLOURED ZINNIA.SYNONYME.—? *Z. angustifolia*, *Hum.*; ? *Z. hybrida* var. *sulphurea*.ENGRAVING.—Our *fig.* 3, in Plate 35.

SPECIFIC CHARACTER.—Stem erect, pubescent. Leaves sessile, hispid,

ovate, acuminate. Peduncles cylindrical. Involucral scales squarrose. Ligulæ elliptic. Paleæ of receptacle quite entire, narrow, acute. Achenia of the disk emarginately-bidentated, ciliated.

DESCRIPTION, &c.—This plant so strongly resembles *Z. hybrida* in the shape of its flowers, and its conical disk, that it is probably only a variety of that species; or it may be the *Z. angustifolia* of Humboldt, with the leaves become broader by cultivation. *Z. angustifolia* is a native of Mexico, and is stated to have been introduced in 1824. The name of *Z. sulphurea* is not mentioned in any of the botanical catalogues.

6.—ZINNIA ELEGANS, *Jacq.* THE ELEGANT ZINNIA.

SYNONYME.—*Z. violacea*, *Cav.*

ENGRAVINGS.—*Bot. Mag.* t. 527 ; *Bot. Rep.* 1, t. 55 ; and our *fig.* 7, in Plate 35.

SPECIFIC CHARACTER.—Stem erect, hairy. Leaves sessile, stem-clasping, cordate, ovate. Peduncles solitary, longer than the leaves, cylindrical. Involucral scales ovate-obtuse ; upper ones margined with

black. Paleæ of receptacle serrated. Achenia of the disk mutic, scarcely bidentated. Ligulæ obovate.

VARIETIES.—*Z. e.* 2 alba, *Dec.* ; and our *fig.* 6, in Plate 35. The flowers are whitish, or rather a very pale yellow. *Z. e.* 3 purpurascens, *Dec.* ; and our *fig.* 5. The flowers are of a very rich dark crimson. *Z. e.* 4 coccinea, *Dec.* ; *Bot. Reg.* t. 1295. ; and our *fig.* 8. The flowers are scarlet.

DESCRIPTION, &c.—This is by far the handsomest of all the Zinnias. Like the others, it is a native of Mexico, and requires to be raised on a hot-bed in this country ; but when planted out, it grows more luxuriantly than any of the other kinds, and is, perhaps, the only one truly deserving of cultivation by amateurs. All the varieties are as handsome as the species ; and they all come true from seed. Seeds are common in all the seed-shops.

TRIBE CYNARÆ.

GENUS XXXV.

CALENDULA, *Neck.* THE MARIGOLD.*Lin. Syst.* SYNGENESIA NECESSARIA.

GENERIC CHARACTER.—Flowers of the ray ligulate, female ; those of the disk tubular, male. Corollas hispid. Involucral scales in two series. Receptacle naked, flat. Anthers subulate, tailed. Style ending in a hispid bifid cone. Achenia of the ligular flowers without

pappus ; middle ones echinated on the back ; drawn out on the sides into an entire, or concave, flat, toothed membrane ; inner ones annular, incurved, mucated on the back.

1.—CALENDULA OFFICINALIS, *Lin.* THE COMMON MARIGOLD.

SYNONYMS.—*Caltha officinalis*, *Mench.* ; *C. vulgaris*, *C. Bauh.*

ENGRAVING.—*Bot. Mag.* t. 3204.

SPECIFIC CHARACTER.—Leaves pubescent ; lower ones entire, spatu-

late ; upper ones lanceolate, stem-clasping, and a little toothed. Achenia all curved, mucated at the back.

DESCRIPTION, &c.—The common marigold was, a century ago, a common flower in every garden ; and it is only since so many finer flowers have been introduced, that it may be said to have gone out of fashion. The double variety is still, however, very generally grown. It is a native of the south of Europe, but it was introduced into England before 1573. It only expands its flowers in broad sunshine. Shakspeare describes it as

“The Marygold that goes to bed wi’ the sun,
And with him rises weeping.”

The popular English name is said to have been corrupted from Mary’s gold ; and to allude to the great use made of this plant as a pot-herb, by the wives of cottagers. *Souci*, the French name, Sir W. J. Hooker tells us in the *Bot. Mag.*, is derived from *Solsequium* to follow the course of the sun ; and *Calendula* from *Calends*, because, from the great length of time the plant continues in flower, it may be said to bloom every month. The flowers of the Marigold, taken internally, are said by the old herb-doctors to be “great comforters of the heart and spirits.” The common Marigold is quite hardy.

2.—CALENDULA STELLATA, *Cav.* THE STAR-LIKE MARIGOLD.SYNONYME.—*C. crista-galli*, *Vahl.*

SPECIFIC CHARACTER.—Stems scabrous. Leaves ovate-oblong, toothed, a little ciliated; lower ones attenuated at the base; upper

ones half stem-clasping, acute. The five outer achenia with membranous toothed margins; the five inner ones boat-shaped, and smooth on the back; the rest angular, and mucronated on the back.

DESCRIPTION, &c.—A handsome plant, with orange flowers, a native of Bombay, introduced in 1795. It is quite hardy, and only requires sowing in the open borders in March or April.

GENUS XXXVI.

CRYPTOSTEMMA, *R. Br.* THE CRYPTOSTEMMA.*Lin. Syst.* SYNGENESIA FRUSTRANEA.

GENERIC CHARACTER.—Head radiate; flowers of the ray neuter, and ligulate or difformed by being palmately parted, or biligulate; those of the disk tubular, 5-toothed, and hermaphrodite. Receptacle honey-combed. Involucral scales free, and in many series. Stamens

and filaments scabrous. Achenia clothed with a long and very dense pubescence. Pappus in one series, the scarious paleæ hidden by the wool of the achenia.

DESCRIPTION, &c.—The species belonging to this genus, were formerly considered to belong to *Arctotis*; but they were separated from that genus, and the name of *Cryptostemma* given to them by Dr. Brown, on account of the long dense wool of the seed, which nearly conceals the pappus with which it is crowned. The name *Cryptostemma* is from the two Greek words, *Kryptos*, hidden, and *stemma*, a crown.

1.—CRYPTOSTEMMA CALENDULACEUM, *R. Br.* THE MARIGOLD-LIKE CRYPTOSTEMMA.SYNONYMES.—*Arctotis Calendula*, *Lind.*; *A. calendulacea*, *Jacq.*ENGRAVING.—*Bot. Mag.* t. 2252.

SPECIFIC CHARACTER.—Ligulæ entire, or toothed at the apex, with two or three very short teeth.

DESCRIPTION, &c.—A showy plant, with bright golden-yellow flowers, and hairy stems. It is a native of the Cape of Good Hope, and was introduced in 1752. It was at one time very common in gardens, but it seems now to have fallen out of cultivation, as its name is not in any of the seedsmen's catalogues that we have. The seeds should be raised on a hot-bed, or not sown till May, as they are rather tender; and the plant requires a warm situation, and a light and rather sandy soil.

2.—CRYPTOSTEMMA HYPOCHONDRIACUM, *R. Br. et Less.* THE MELANCHOLY-LOOKING CRYPTOSTEMMA.SYNONYMES.—*Arctotis tristis*, *Lin.*; *A. hypochondriaca*, *Willd.*; *Cynotis hypochondriaca*, *Hoffm.*

SPECIFIC CHARACTER.—Ligulæ all or mostly 3 or 5-parted; lobes

linear, subpalmate, rarely subbilobate; leaves lyrate, woolly, or cobwebbed, on both sides.

DESCRIPTION, &c.—This plant, being much hardier than the last species, still keeps its place in gardens, and is in all the seedsmen's catalogues under the name of *Arctotis tristis*. It is rather singular that a plant so well known does not appear to have been ever figured. The flowers of the ray are yellow inside, and of very dark purple, almost black outside; whence the name of *tristis*. The plant is a native of the Cape of Good Hope, and was introduced in 1731. The culture is the same as that of the preceding species; and both, though they should be grown in dry soil, require, like all the Cape plants, frequent and abundant watering to bring them to perfection. There is another species, *C. runcinatum*, the leaves of which resemble those of the Dandelion.

GENUS XXXVII.
ECHINOPS, *Lin.* THE GLOBE-THISTLE.

Lin. Syst. SYNGENESIA SEGREGATA.

GENERIC CHARACTER.—Heads 1-flowered, combined, or collected on a globose receptacle, sessile. Proper involucre of many series of scales; outer scales hair-formed and woolly at the base; middle ones fringed or ciliated at the margins; inner ones often combined together,

or with the ovary. Flowers all hermaphrodite, fertile; tube of corolla terete, inflated at the throat; stigmas naked. Fruit clothed with silky villi. Pappus composed of free, short bristles.

1.—ECHINOPS STRIGOSUS, *Lin.* THE MEAGRE, OR ANNUAL, GLOBE-THISTLE.

ENGRAVING.—Bot. Mag. t. 2109.

SPECIFIC CHARACTER.—Leaves pinnatifid, strigose, and clothed with hoary tomentum beneath as well as the stem. Scales of partial invo-

lucre bristle-formed and numerous. Fruit pentagonal, clothed with silky villi.

DESCRIPTION, &c.—This is the only annual species of Globe-Thistle; and though it has no beauty to boast of, it is curious as being the plant from which the Spanish Moxa is made. The Amadou, or common vegetable tinder, is a fungus growing on the beech; but the Moxa, or Spanish tinder as it is called, and which is used like the Amadou for lighting cigars, is said to be made from the pubescence of this plant. The annual Globe-Thistle is a native of Spain, and was introduced in 1729. It was, however, soon lost, but was re-introduced in 1819, by A. B. Lambert, Esq., to whom the botanical world owes so much, and in so many different ways. Seeds are not common in the seed-shops; but when they are procured, they should be sown in the open border in March or April.

GENUS XXXVIII.
XERANTHEMUM, *Tourn.* THE XERANTHEMUM.

Lin. Syst. SYNGENESIA SUPERFLUA.

GENERIC CHARACTER.—Heads heterogamous. Involucral scales imbricated, scarious. Paleæ of receptacle scarious, tripartite. Flowers of the disk hermaphrodite, 5-toothed; those of the ray female,

bilabiate. Anthers linear, bicornute at the base. Fruit of the hermaphrodite flowers silky, with persistent paleaceous pappus.

1.—XERANTHEMUM ANNUM, *Lin.* THE ANNUAL XERANTHEMUM.

SYNONYMS.—*X. radiatum*, *Lam.*; *Centaurea dubia*, *Gmel.*; *X. ornatum*, *Cass.*; *X. inodorum*, *Manch.*

inner leaves much longer than the rest.

VARIETIES.—*X. a.* 2 fl. pl., our *fig.* 9, in Plate 34. *X. a.* 3 album *fig.* 10, in Plate 34.

SPECIFIC CHARACTER.—Involucre hemispherical, quite glabrous;

DESCRIPTION, &c.—This is by far the most elegant of all the Everlastings. It is a native of the South of Europe, and was first cultivated in the Oxford Botanic Garden about 1658. It requires no other care than sowing the seeds in the open border in February or March, or in Autumn; as it will stand through the winter, unless very severe; and autumn-sown plants are always stronger and flower earlier than those sown in spring. If gathered as soon as the flowers are expanded, these flowers may be kept for years; and when the brilliancy of the colour of the lilac kind has faded, Philips, in his "*Flora Historica*," tells us that it may be restored by holding the flowers in the vapour of any acid. He also mentions that the seeds, or fruit, when dry, sometimes become detached from the receptacle in a very beautiful manner. Being kept together by the feathery nature of the pappus, the whole mass first swells into "a kind of dome, the feathers being attached to each other in the most delicate manner imaginable with the seeds downwards; after which, as they loosen themselves, the effect is still more delicate and singular, as it resembles, in miniature, a number of stars being thrown out of a circular piece of fire-work."

GENUS XXXIX.
CENTAUREA, *Lin.* THE CENTAURY.

Lin. Syst. SYNGENESIA FRUSTRANEA.

GENERIC CHARACTER.—Involucral scales various. Corollas of the ray large, sterile, or hermaphrodite. Achenia compressed. Pappus composed of subfiliform bristles, scabrous, usually in many series; inner series small and somewhat connivent. A very polymorphous genus.

DESCRIPTION, &c.—This genus is well known from the English weeds, Knapweed, Bluebottle, and Star-Thistle, which belong to it. The flowers are all very striking in their forms, though they differ widely from each other. The name of *Centaurea* is said to have been given to this genus because one of the species was used in medicine by the centaur Chiron.

1.—CENTAUREA CYANUS, *Lin.* THE CORN-BLUEBOTTLE.

ENGRAVINGS.—Eng. Bot. t. 277; 2nd. edit., vol. 6, t. 1133; and our *fig.* 8, in Plate 33.

SPECIFIC CHARACTER.—Stem erect, branched, tomentose, as well as the leaves. Leaves linear, sessile, quite entire, lower ones the broadest,

toothed, or pinnatifid.

VARIETIES.—These are very numerous; but those most generally grown in gardens are the lilae, *fig.* 5, the pink, *fig.* 6, and the dark purple, *fig.* 7, all in plate 33.

DESCRIPTION, &c.—The beauty of this flower is so great that it is in common cultivation in gardens, notwithstanding its frequency in our corn-fields. “No artificial colour,” observes Sir J. E. Smith, “can equal the brilliancy of the blue of the outer florets of the Cyanus.” It may be sown at any season; but generally February or March is preferred, or the seeds are sown in autumn and the plants are left to stand through the winter.

2.—CENTAUREA CROCODYLIUM, *Lin.* THE CROCODYLIUM, OR BLUSH-CENTAURY.

ENGRAVING.—Our *fig.* 1, in Plate 33.

SPECIFIC CHARACTER.—Stem erect, sparingly branched. Leaves

almost glabrous, pinnatifid; outer lobe larger than the rest, in the lower leaves ovate, in the upper ones oblong or linear.

DESCRIPTION, &c.—A curious and beautiful plant, not now so much cultivated as it ought to be. It is a native of the Levant, and was introduced in 1777. The name is in the seed-catalogue of Forrest and Black, at Kensington, and we have seen magnificent specimens of the plant growing in the Hammersmith Nursery.

3.—CENTAUREA AMERICANA. THE AMERICAN CENTAURY.

SYNONYMES.—*C. Nuttallii*, *Spreng.*; *C. grandiflora*, *Sesse et Moc.*; *Plectocephalus americanus*, *D. Don.*

ENGRAVING.—Swt. Brit. Flow. Gard. 2nd ser. t. 51.

SPECIFIC CHARACTER.—Leaves oblong, membranous, undivided. Peduncles ventricose at the apex. Outer involucral scales about a third of the length of their appendages.

DESCRIPTION, &c.—A very splendid and singular plant, having a large star-like flower. The ray flowers are lilae, and those of the disk nearly white. It is a native of the Arkansas territory, where it was discovered by Nuttall. It was introduced in 1823; and seeds may be procured at all the seed-shops. The seeds should be sown in March, or they may be raised on a hot-bed, and planted out in the beginning of April. The flower is very large and showy, and it is not suitable for a small garden.

4.—CENTAUREA DEPRESSA, *Bieb.* THE PROSTRATE CENTAURY.

SYNONYME.—*C. pygmaea*, *Hoffm.*

ENGRAVING.—Bot. Mag. t. 3662.

SPECIFIC CHARACTER.—Stem branched from the base, declinate, or

simple and erect; clothed with white tomentum, as well as the leaves. Cauline leaves oblong, sessile, quite entire, lower ones a little toothed. Umbilicus of the fruit bearded. Pappus equal in length.

DESCRIPTION, &c.—In the shape of the flower, this species strongly resembles the common corn-bluebottle of the fields; but its colours are far more brilliant, and its stems are not above six or eight inches long. The whole plant is covered with a white down. It is a native of Iberia and Persia, and seeds of it were sent to England by Dr. Fischer, early in the spring of 1838. It flowered in August the same year, in the Glasgow Botanic Garden, in the open border, and may consequently be considered quite hardy. Seeds are not yet common in the seed-shops.



1. *Centaurea Crocodylum*. 2. *Centaurea moschata alba*. 3. *Centaurea nanchala*.
 5. 6. 7. 8. *Centaurea cyanus*, four varieties. 9. *Ammobium alatum*.

GENUS XL.

AMBERBOA, *Dec.* THE SWEET SULTAN.*Lin. Syst.* SYNGENESIA FRUSTRANEA.

GENERIC CHARACTER.—Involucral scales various. Corollas of the ray ample, sterile. Stamens with puberulous, or papillose filaments. Fruit compressed or turbinate, with a lateral or basilar areola. Paleæ of pappus oblong or obovate, rarely wanting.

DESCRIPTION, &c.—The Sweet Sultans were formerly considered to belong to the genus *Centaurea*, but have been separated from it by De Candolle. *Amberboa* is the Turkish name for *A. moschata*.

1.—AMBERBOA ODORATA, *Dec.* THE YELLOW SWEET SULTAN.

SYNONYME.—*Centaurea suaveolens*, *Lin.*

ENGRAVINGS.—SWT. Brit. Flow. Gard. t. 51; and our *fig.* 4, in Plate 33.

SPECIFIC CHARACTER.—Corollas of the ray widened upwards, longer

than those of the disk. Pappus paleaceous, a little shorter than the fruit.

VARIETIES.—*A. o.* 2 *glauca*, *Dec.*; *C. glauca*, *Willd.* This variety has purple flowers.

DESCRIPTION, &c.—The honey-scent of this flower and its beauty, have long made it a favourite in gardens. It is a native of Persia and the Levant, and it was introduced in 1689. It is generally thought tender, and raised on a hot-bed; but will do quite well in the open border if sown in April or May.

2.—AMBERBOA MOSCHATA, *Dec.* THE COMMON SWEET SULTAN.

SYNONYME.—*Centaurea moschata*, *Lin.*

ENGRAVING.—Our *fig.* 3, in Plate 33.

SPECIFIC CHARACTER.—Corollas of the ray wide, not exceeding those of the disk. Pappus none.

VARIETY.—*A. m.* 2 *alba*, our *fig.* 2, in Plate 33.

DESCRIPTION, &c.—The smell of this flower is so overpowering from its honey-like sweetness, that it is almost impossible to bear it in a room. It is very handsome. It is a native of Persia and Turkey, whence it was sent to England shortly before 1629.

GENUS XLI.

CARTHAMUS, *Lin.* THE CARTHAMUS.*Lin. Syst.* SYNGENESIA ÆQUALIS.

GENERIC CHARACTER.—Heads homogamous. Outer involucral scales foliaceous, spreading; middle ones erect, oval, expanded at the apex into an ovate appendage, which is spiny along its margin; the inner ones oblong, entire, each ending in a pungent point. Receptacle

fringed. Corollas 5-cleft, almost regular, the tube expanding above the disk. Anthers each terminated by an obtuse appendage. Stigmas scarcely distinct. Achenia obovate, tetragonal, glabrous. Pappus wanting.

1.—CARTHAMUS TINCTORIA, *Lin.* THE DYER'S CARTHAMUS, OR SAFFLOWER.

SYNONYMS.—*Cnicus vulgaris*, *Clus.*; Bastard Saffron.

ENGRAVINGS.—Bot. Reg. t. 170.

SPECIFIC CHARACTER.—Plant glabrous. Cauline leaves ovate-lanceolate, spinosely serrated.

DESCRIPTION, &c.—The flower of this plant is not very beautiful, as, indeed, it very much resembles that of the Globe Thistle, and what is remarkable, though it is of a yellowish-orange, the colour it produces is a beautiful pink. It is a native of Egypt; but it was introduced into England in 1551, and was once cultivated to some extent in Gloucestershire. It still forms an article of commerce as a dyer's drug; and it is said to be the principal ingredient in the cosmetic called Vegetable Rouge, or Spanish Vermilion. In Spain, and along the shores of the

Mediterranean, the leaves are eaten as a kind of vegetable. The seed was formerly used as a medicine, and it is still called Parrot's Corn, as it is said to be particularly wholesome for those birds, though injurious for most others. The seeds are common in the English seed-shops, and they may be sown at almost any season, and in almost any soil.

2.—*CARTHAMUS OXYACANTHA*, *Bieb.* THE SHARP-SPINED *CARTHAMUS*.

SPECIFIC CHARACTER.—Plant rather villous. Leaves oblong-lanceolate, with spiny margins. Fruit ovate-compressed.

DESCRIPTION, &c.—A plant with yellow flowers and spiny leaves, growing about three feet high. A native of Caucasus. Introduced in 1818.

GENUS XLII.

KENTROPHYLLUM *Neck.* THE *KENTROPHYLLUM* OR WOOLLY *CARTHAMUS*.

Lin. Syst. SYNGENESIA ÆQUALIS.

GENERIC CHARACTER.—Head homogamous. Involucral scales ovate, outer ones foliaceous, pinnatifid, spinose; inner ones oblong, scarcely toothed, but ending in a spinose point. Receptacle thick, fringed. Corollas 5-cleft, regular; the ray ones sometimes very few, sterile, and filiform. Filaments furnished with a ring of hairs. Anthers terminated each by an obtuse appendage. Stigmas combined. Achenia

thick, obovate, and somewhat tetragonal, glabrous, denticulated at the apex, with an oblique areola. Pappus in the marginal flowers wanting, in the rest paleaceous, the outer paleæ membranous, ciliated on the margins, imbricated; the inner ones very short, in one series, truncate, and toothed.

1.—*KENTROPHYLLUM LANATUM*, *Dec.* THE WOOLLY *KENTROPHYLLUM*, OR YELLOW DISTAFF-THISTLE.

SYNONYMES.—*Carthamus lanatus*, *Lin.*; *Cirsium lanatum*, *Dec.*; *Heracantha lanata*, *Link.*

ENGRAVING.—*Bot. Mag.* t. 2142.

SPECIFIC CHARACTER.—Stem pilose at the base, and cobwebbed at the top; lower leaves pinnatifidly toothed; upper ones stem-clasping, pinnatifidly toothed. Involucrum more or less woolly.

DESCRIPTION, &c.—A curious plant, somewhat resembling a thistle in its flower, but having its stem clothed with a downy pubescence, which hangs down from the head and upper part of the stalk, like the wool from a distaff used in spinning. It is supposed to be the *Arctactylis* of the ancients. It is a native of the south of Europe, and was cultivated in England before 1596, as it is mentioned by Gerard as growing in his garden in that year. It is quite hardy, and will grow in any soil and situation.

TRIBE CICHORACEÆ.

GENUS XLIII.

TOLPIS, *Biv.* THE PURPLE-EYED YELLOW HAWKWEED.

Lin. Syst. SYNGENESIA ÆQUALIS.

GENERIC CHARACTER.—Involucral scales in few series, calyculated by linear setaceous bracteas. Receptacle honey-combed. Achenia turbinate, striated, beakless. Pappus in one series.

1.—*TOLPIS BARBATA*, *Gærtn.* THE BEARDED *TOLPIS*, OR PURPLE-EYED HAWKWEED.

SYNONYMES.—*Crepis barbata*, *Lin.*; *Drepania barbata*, *Dec.*; *Hieracium proliferum*, *Bauh.*

ENGRAVINGS.—*Bot. Mag.* t. 35; and our *fig.* 6, in Plate 31.

SPECIFIC CHARACTER.—Stem erect, branched, leafy. Leaves lanceolate, toothed. Bracteas exceeding the scales of the involucre.

DESCRIPTION, &c.—A very well-known flower, which, though introduced in 1620, has maintained its place

in our gardens ever since. It is a native of the South of France, and the seeds will come up, and generally produce abundance of flowers, if sown in any soil and situation, and at almost any season. Seeds are sold in the seed-shops under the name of *Crepis barbata*.

GENUS XLIV.

BOERKHAUSIA, *Bell.* THE BOERKHAUSIA, OR REDDISH-LILAC HAWKWEED.

Lin. Syst. SYNGENESIA ÆQUALIS.

GENERIC CHARACTER.—Involucrum calyculated, rarely subimbricated. Receptacle nearly naked, or fringed. Achenia terete, some of the central ones attenuated into a long beak. Pappus in many series, pilose.

BOERKHAUSIA RUBRA, *Link.* THE REDDISH BOERKHAUSIA.

SYNONYMES.—*Crepis rubra*, *Lin.*; *Barkhausia rubra*, *Manch.*

ENGRAVING.—Our *fig.* 2, in Plate 32.

SPECIFIC CHARACTER.—Stems leafy from the base and branched,

naked at top. Leaves usually radical, and ruminately lyrate, petiolate; cauline ones sessile, linear, cut at the base. Outer scales of involucrum lanceolate, acuminate, glabrous; inner ones rather scabrous.

DESCRIPTION, &c.—A tall-growing plant with very slender stems and lilac flowers, which are generally double. It is a native of Italy, whence it was introduced in 1632. It is quite hardy, and should be sown in the open border; but always where it is to remain, as it will not bear transplanting unless when very young. When the plant sends up its flower-stalks, they are so long and slender that they should be staked and tied. Seeds are to be procured in nearly all the seed-shops, under the name of *Crepis rubra*.

GENUS XLV.

PICRIDIMUM, *Desf.* THE POPPY-LEAVED VIPER'S-GRASS.

Lin. Syst. SYNGENESIA ÆQUALIS.

GENERIC CHARACTER.—Involucrum ovate, imbricated, the scales white at the margin. Receptacle naked, honeycombed. Achenia quadraangular, prismatic, transversely tuberculated, trunculate and beakless at the apex. Pappus in many series, pilose.

DESCRIPTION, &c.—The species comprised in this genus have been separated by Professor De Candolle from the genus *Scorzonera*. *Picridium* is from a Greek word signifying bitter, and alludes to the taste of the plants.

PICRIDIMUM TINGITANUM, *Dec.* TANGIER SCORZONERA, OR POPPY-LEAVED VIPER'S-GRASS.

SYNONYMES.—*Scorzonera tingitana*, *Sims.*; *Sonchus tingitanus*, *Lin.*

SPECIFIC CHARACTER.—Stem branched. Leaves all runcinate, half stem-clasping. Peduncles scaly. Outer scales of the involucrum squarrose.

DESCRIPTION, &c.—A showy plant with a head of yellow flowers, and stem-clasping leaves. It is a native of Tangiers, and was introduced in 1713. It is quite hardy, but the seeds should be sown in a dry soil. The flowers soon fade when exposed to the sun, and they are seen to most advantage in cloudy weather. Seeds may be had at the Kensington nursery and in other seed-shops; and they should be sown with the other annuals in spring.

OTHER ANNUAL COMPOSITÆ.

The following have all been introduced, and many of them are to be met with in nurseries and seed-shops, but they are by no means in general cultivation.

CENTRATHERUM INTERMEDIUM, *Dec.*; AMPHEREPHIS INTERMEDIA, *Link.*, Swt. Brit. Flow. Gard. t. 225.

A weedy-looking plant, with small heads of purple flowers. It is a native of Brazil, and requires to be raised on a hotbed. It was introduced in 1821. There are two other species, *C. punctatum* and *C. muticum*, both introduced about the same time, and both natives of South America.

LAGASCEA MOLLIS, *Willd.*, Bot. Mag. t. 1804.

A tender annual, a native of Cuba, requiring to be kept in the stove in England. The flowers are whitish, and are produced in heads like those of the clover, but are much smaller. Introduced in 1815.

EVAX PYGMÆ, *Dec.*; FILAGO PYGMÆA, *Willd.*

A little insignificant plant, with brownish flowers, a native of the south of Europe, introduced in 1629. There are three other species.

MICROPUS SUPINUS, *Dec.*

A little trailing plant, with silvery leaves, and the flowers in heads. *M. erectus* differs principally in having the flower-stalks erect. Both are natives of the south of Europe, and were introduced more than a century ago.

AMBROSIA.

There are several species mentioned in nurserymen's seed catalogues, but they are none of them worthy of cultivation, though they have all a slight fragrance like that of new hay. One species, *A. maritima*, is a native of Italy, and was introduced in 1570, but the others are natives of America.

PARTHENIUM HYSTEROPHORUS, *Willd.*

An insignificant plant with very small white flowers; a native of Jamaica, where it is called wild wormwood. It was introduced in 1728, but having no beauty it has never been grown but in botanic gardens.

SIMSIA FICIFOLIA, *Dec.*; COREOPSIS FÆTIDA, *Cav.*; XIMENESIA FÆTIDA, *K. S.*

A yellow-flowered plant resembling a *Coreopsis*, but with a very unpleasant smell. A native of Mexico, introduced in 1799.

MATRICARIA CHAMOMILLA, *Smith.* THE WILD CHAMOMILE.

This is rather a pretty English weed. *M. inodorum*, the corn-feverfew, is also pretty, but neither of them are thought worth cultivating except in botanic gardens.

CALENDULA ASTERIAS, *F. M.* THE STARRY MARYGOLD.

A most beautiful species, a native of Barbary, introduced in 1836, but at present very little cultivated. We do not know where seeds are to be procured.

CRYPTOSTEMMA CALENDULACEA, *R. Br.*, Bot. Mag. t. 2252; ARCTOTIS CALENDULACEA, *Willd.*

A very pretty little plant, with bright yellow flowers, and lyrate-shaped leaves. It is a native of the Cape of Good Hope, and was introduced in 1752.

CHARDINIA ORIENTALIS, *D. Don.* ; C. XERANTHEMOIDES, *Desf.* ; XERANTHEMUM ORIENTALE, *Willd.*

A kind of white everlasting flower, a native of the Levant ; introduced in 1713, but very seldom to be met with in gardens.

CENTAUREA PULCHELLA, *Dec.*

A very pretty purple flower, a native of Persia, introduced in 1836.

TRIPTILION CORDIFOLIUM, *Log.*, Bot. Reg. t. 853.

A very curious little plant with white flowers, a native of Chili, introduced in 1823.

SCOLYMUS MACULATUS, *Dec.* THE GOLDEN-THISTLE.

A native of the south of Europe, introduced in 1633. The flowers are yellow.

There are many other species, but the above are the most ornamental.

CHAPTER XXXV.

DIPSACEÆ.

<p>ESSENTIAL CHARACTER.—Calyx adherent, with a variable limb. Corolla monopetalous, inserted near the top of the calycine tube, usually unequal, 4 or 5-cleft. Stamens 4, epipetalous. Style one, simple. Fruit indehiscent, membranous or submentaceous, 1-celled,</p>	<p>1-seeded, crowned by the limb of the calyx. Seed pendulous, albumen fleshy. Herbs or under shrubs, with alternate or verticillate, variable leaves. Flowers disposed in dense heads girded by involucre.—(<i>G. Don.</i>)</p>
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GENUS I.

KNAUTIA, *Coult.* THE THUANTIA.

Lin. Syst. TETRANDRIA MONOGYNIA.

GENERIC CHARACTER.—Involucrum of many leaves. Paleæ none. Receptacles hairy. Involucre girding the fruit, denticulated at the apex. Limb of calyx cup-shaped. Corolla 4 or 5-cleft. Stamens 4.—(*G. Don.*)

1.—KNAUTIA ORIENTALIS, *Lin.* THE ORIENTAL THUANTIA.

<p>SYNONYMES.—<i>Scabiosa orientalis</i>, <i>Log.</i> ; <i>Knautia trichotoma</i>, <i>Mærch.</i></p> <p>SPECIFIC CHARACTER.—Leaves oblong, cut or entire ; involucrum</p>	<p>cylindrical, of 5 to 10-erect leaves ; corollas 5 to 10 in each head ; outer ones radiating, longer than the involucrum ; teeth of involucre 12 to 15, very short ; ciliæ of calyx obsolete.—(<i>G. Don.</i>)</p>
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DESCRIPTION, &c.—A very pretty little plant, with pink flowers, looking very much like a kind of *Lychnis* or *Silene*. It is a native of the Levant, and was introduced in 1713. As it seeds freely and will grow in any soil and situation, it has kept its place in gardens, while much handsomer flowers have fallen out of cultivation. There are several other annual species, but this is the only kind grown in British gardens. The name of *Knautia* was given to this genus in honour of Dr. Knaut, a Saxon physician, residing at Halle, who died in 1694.

CHAPTER XXXVI.

VALERIANACEÆ.

ESSENTIAL CHARACTER.—Calyx adherent; limb variable in the different genera. Corolla monopetalous, usually 5-lobed, having the tube gibbous or spurred at the base. Stamens one to five, adnate to the corolla at the base. Style one, crowned by two or three free or confined stigmas. Fruit membraeous or subnuculentaceous, inde-

hiscent, crowned by the limb of the calyx, one or three-celled; when the latter is the case, the two lateral ones are abortive. Seed pendulous. Albumen none. Annual or perennial herbs, with variable, opposite, exstipulate leaves, and cymose corymbs of flowers.—(*G. Don.*)

GENUS I.

FEDIA, *Manch.* THE PURPLE-STEMMED VALERIAN, OR LAMB'S-LETTUCE.

Lin. Syst. DIANDRIA MONOGYNIA.

GENERIC CHARACTER.—Limb of calyx with four unequal subulate lobes. Corolla filiform, with an unequally 5-lobed subringent limb. Stamens two. Stigma bifid. Fruit spongy, indehiscent, 3-celled.—(*G. Don.*)

FEDIA CORNUCOPIÆ, *Gartn.* THE HORN-LIKE FEDIA.

SYNONYMES.—*F. incrassata*, *Manch*; *Valeriana cornucopiæ*, *Lin.*; *V. indica*, *Clus.*

ENGRAVINGS.—*Bot. Reg.* t. 155; and our *fig.* 4, in Plate 38.

SPECIFIC CHARACTER.—Leaves ovate-oblong, toothed; lower ones petiolate; upper ones sessile; flowers corymbose, in fascicles; peduncles thickened, fistular.—(*G. Don.*)

DESCRIPTION, &c.—This is the plant which is sold in the seed-shops under the name of Horns, from the curious shape of the seed-pods, which resemble those of the scarlet-flowered *Loasa* (*Caiophora*). The plant is rather coarse-growing, with a thick purple stem, and heads of rather pretty small pink flowers. It is a native of the shores of the Mediterranean, and was introduced in 1596. The seeds should be sown in the open border in March, in rather a light soil, and they will require no other care. The name of *Fedia* is derived from an ancient Latin word signifying a kid; and it is applied to this plant, because goats are said to be fond of browsing on it.

GENUS II.

PLECTRITIS, *Dec.* THE PLECTRITIS.

Lin. Syst. TRIANDRIA MONOGYNIA.

GENERIC CHARACTER.—Limb of calyx entire. Corolla gibbous at the base in front from a short spur, with a 5-lobed bilabiate limb. Stamens 3. Capsule cartilaginous, 1-celled, 2-winged.—(*G. Don.*)

PLECTRITIS CONGESTA, *Dec.* THE CROWDED-FLOWERED PLECTRITIS, OR PINK VALERIAN.

SYNONYME.—*Valerianella congesta*, *Lindl.*

ENGRAVING.—*Bot. Reg.* t. 1095.

SPECIFIC CHARACTER.—Flowers crowded, in whorls. Bractæas multifid, with subulate segments.

DESCRIPTION, &c.—A rather curious plant, with whorls of dark rose-coloured flowers. A native of the North-west coast of America, where it was found on the shore near the mouth of the Columbia, and sent home by Douglas in 1826. It flowers in July. The seeds should be sown in light soil, and the plants should be often watered, but they will require no other care. They will not bear transplanting.

GENUS III.

CENTRANTHUS, *Dufr.* THE SPURRED VALERIAN.*Lin. Syst.* MONANDRIA MONOGYNIA.

GENERIC CHARACTER.—Limb of calyx involute at the time of flowering, but afterwards evolute and deciduous, of many feathered bristles. Corolla with a narrow tube, which is spurred at the base, and a regular 5-lobed limb. Stamen one. Fruit indehiscent, 1-celled, and 1-seeded at maturity.—(*G. Don.*)

CENTRANTHUS CALCITRAPA, *Dufr.* WATER CALTROP-LEAVED SPURRED VALERIAN.

SYNONYMES.—*Valeriana calitrapa*, *Lin.*; *V. annua*, *Gray*; ? *V. orbiculata*, *Sib. et Smith.* SPECIFIC CHARACTER.—Radical leaves ovate, entire, or lyrate; upper ones pinnatifid; flowers rather panicled; spur very short.—(*G. Don.*)

DESCRIPTION, &c.—Closely resembling the beautiful red-spurred Valerian, so common on the chalk cliffs near Greenhithe and Gravesend, but with white flowers tinged with pink. A native of the banks of the Mediterranean, introduced in 1683. The seeds are common in the seed-shops, and they do best sown in light calcareous soil, in an open airy situation. They require abundance of light and air, and but little water.

CHAPTER XXXVII.

HYDROPHYLLACEÆ.

ESSENTIAL CHARACTER.—Calyx 5-cleft, persistent, the recesses between the segments usually furnished with reflexed appendages. Corolla monopetalous. Stamens 5, perigynous. Anthers versatile. Style bifid. Capsule 2-valved, often 2-celled, in consequence of the large placenta filling the capsule. Albumen cartilaginous. Elegant herbs, but hairy like those of Boraginaceæ. Leaves alternate, usually lobed, the lower ones opposite. Flowers blue or pink, disposed in one-sided, somewhat dichotomous spikes or racemes, which are scarpoid before the expansion of the flowers.—(*G. Don.*)

DESCRIPTION, &c.—This order was comparatively unknown to the lovers of ornamental flowers till the beautiful Californian annuals belonging to it were sent home by Douglas, but now everybody who has seen the *Nemophilas*, *Eutocas*, and *Phacelias*, will feel an interest in the order to which they belong. The name of *Hydrophyllaceæ* is derived from that of the genus *Hydrophyllum*, literally Water-leaf, in allusion to the plants having leaves so curved as to retain water standing in them. All the plants belonging to the order grow best in moist shady situations.

GENUS I.

ELLISIA, *Lin.* THE ELLISIA.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx without appendages. Corolline processes 10, short, or wanting. Stamens rather shorter than the corolla. Placentas large, biovulate.—(*G. Don.*)

ELLISIA NYCTELEA, *Lin.* CUT-LEAVED ELLISIA.SYNONYME.—*Polemonium Nyctelea*, *Ehret.*

SPECIFIC CHARACTER.—Petioles without appendages; leaves pinnatifid, with cut lobes; calyx increasing much after florescence.—(*G. Don.*)

DESCRIPTION, &c.—A low plant, with large downy leaves, and star-like flowers, which are white, with very small purple dots. It is a native of Virginia, and was introduced in 1755. The genus was named by Linnæus

in honour of his friend and correspondent John Ellis, F.R.S. The plant is now rarely to be met with, and is probably lost; but it deserves to be re-introduced. It is of the easiest culture, as nothing more is necessary than to strew the seeds on the ground in any tolerably moist and shady situation, and the plants will need no farther care.

GENUS II.

NEMOPHILA, *Barton*. THE NEMOPHILA.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Sinuses of the calyx furnished with reflexed teeth. Corolline processes 10, short or wanting. Stamens rather shorter than the corolla. Placentas large, 2 to 12-ovulate.—(*G. Don.*)

1.—NEMOPHILA PHACELIODES, *Bart.* THE PHACELIA-LIKE NEMOPHILA.

SYNONYME.—*N. Nuttallii*, *Coll.*

ENGRAVINGS.—*Bot. Mag.* t. 2373; *Swt. Brit. Flow. Gard.* 1, t. 32; *Bot. Reg.* t. 740; *Bot. Gard. No.* 586; and our *fig.* 8, in Plate 37.

SPECIFIC CHARACTER.—Petioles without appendages; corolla exceeding the calyx a little; sinuses of the calyx furnished with lanceolate appendages, which equal in length one half of the calyx; placentas biovulate.—(*G. Don.*)

DESCRIPTION, &c.—The flowers are large and of a pale lilac; the plant has strong stems growing at least a foot high, and the calyxes are furnished with narrow leafy appendages. This species was the first *Nemophila* discovered, and it was found by Nuttall in shady places on the banks of the Missouri in the Arkansas territory, in North America. Seeds of it were sent to England in 1822, and it flowered in several gardens; it was, however, soon after lost, and not re-introduced till about 1837. It is still rather scarce, but we saw it flowering beautifully in the garden of Mrs. Maryatt at Wimbledon House in the summer of 1839, and we there obtained the specimen from which our drawing was made. The culture resembles that of other annuals, except that it should not be thinned out, and that it should always be kept in the shade.

2.—NEMOPHILA AURITA, *Lindl.* THE EAR-SHAPED NEMOPHILA.

ENGRAVINGS.—*Bot. Reg.* 1601; *Bot. Gard. No.* 666; and our *fig.* 6, in Plate 37.

SPECIFIC CHARACTER.—Petioles auriculate dilated at the base; sinuses of the calyx furnished with elongated appendages; corolla twice as long as the calyx; placentas biovulate.—(*G. Don.*)

DESCRIPTION, &c.—The beauty of this species depends entirely on the manner in which it is trained, as the stems, though thick and rather coarse-looking, are much too weak to support themselves. The flowers are purple, and are very pretty when they are displayed to advantage; the calyx is curiously shaped, and is lengthened out into large appendages, something like those that distinguish the genus *Malope* from the genus *Malva*. The leaves are very strongly marked; they are somewhat arrow-shaped, and deeply lobed, the lobes pointing towards the stems; they are also ear-shaped at the base. This species is a native of California, where it was discovered and sent home by Douglas in 1831, and as it seeds freely it is now common in the seed-shops. The seeds should be sown as soon as they are ripe, in order that they may stand the winter, or in January or February, as the young plants are quite hardy and bear cold better than they do heat. When they come up they should be thinned out to three or four in each patch, and a slight frame formed of three painted sticks, placed in the centre, or over them, to which the stems may be tied. Sometimes only one plant is left, and this is trained to a pyramidal ladder-like



1 *Eutoca Wrangeliana*... 2 *Eutoca viscida*... 3 *Eutoca Menziesii*... 4 *Eutoca Franklinii*
 5 *Nemophila atomaria*... 6 *Nemophila aurita*... 7 *Nemophila insignis*... 8 *Nemophila Phaceliovae*.

frame, made of slender strips of laths. Of course, the manner of training may vary according to taste ; and the plant looks very well nailed against a wall or wooden paling : all that is necessary is to give it some support, as it not only never flowers well if it is suffered to lie on the ground, but the stems, which are very succulent, soon become rotten and decay. When well trained, and grown in a moist shady situation, the flowers will not only be large and beautiful, but will be produced in greater abundance and for a much longer period than is generally the case with the Californian annuals.

3.—NEMOPHILA INSIGNIS, Doug. THE SHOWY NEMOPHILA.

ENGRAVINGS.—Bot. Reg. t. 1713 ; Bot. Mag. t. 3485 ; Swt. Brit. Bot. Gard. 2nd ser., t. 329 ; Bot. Gard. No. 635 ; Paxt. Mag. of Bot. vol. iii. p. 151 ; and our fig. 7, in Plate 37. SPECIFIC CHARACTER.—Petioles without appendages ; corolla twice as long as the calyx ; placentas 10 to 12-ovulate.—(G. Don.)

DESCRIPTION, &c.—It is not possible to imagine a more beautiful blue than is displayed in this lovely little flower. It is like the finest ultra-marine, softened in the centre into white ; and a bed of it has a most beautiful effect in a geometrical flower-garden, where the beds are designed each to present a rich mass of colour, and to be strongly contrasted with each other. In such a garden, where the scarlet is represented by the *Verbena Melindres* pegged down so as to cover the bed ; the purple by the *Petunia phœnicea* ; the white by *Petunia nictaginifolia* ; and the yellow by *Lasthenia glabrata* or *californica*, the blue may be filled with equal effect by the *Nemophila insignis* ; and such a garden, well kept (like that at Dropmore), with a bright sun shining on it, will present a blaze of beauty almost too dazzling for the eye to rest on. In all gardens, however, this *Nemophila* is exceedingly valuable for the extraordinary beauty of its flowers ; and, accordingly, it has become an almost universal favourite. It is a native of California, where it was found by Douglas in 1832. Common, however, as this plant now is, and easy as its culture appears, there are some difficulties in it which it is necessary to guard against. The name of the genus *Nemophila*, which signifies literally a lover of the woods, seems to point out the kind of situation in which all the species should be placed ; but at the same time, it is found by experience, that in a very dark and shaded situation they will not long continue to thrive. The fact is, that the blossoms do not expand well unless they have plenty of light, though the roots of all the *Nemophilas* being very weak, and their stems just at the collar very slender, the plants are easily destroyed if these tender parts are ever suffered to become too dry. A few hours' bright sunshine on the collar of a plant of *Nemophila insignis* will be sufficient to kill it, however large and thriving it may be, as the roots will wither as soon as they become thoroughly dry, and there is not vigour enough in the collar to enable it to throw out fresh roots. Thus many persons who have grown the *Nemophila insignis*, have been surprised to find their plants die while yet full of buds, and before they have ripened a single seed ; and that this death has taken place suddenly, and without any apparent cause. Fresh seeds have been procured and sown, they have rapidly germinated, and, in a month or six weeks, have produced flowers, which have continued for a long time in beauty, and been followed by a succession of others, even to the middle of winter. The reason for this apparent contradiction exists in the greater power of the sun on the roots of the early flowering plants ; while those of the second sowing, not coming to perfection before autumn, were less likely to be injured by the drought and heat. Notwithstanding the necessity which thus evidently exists for keeping the roots of the *Nemophilas* moist and in the shade, it must be observed, not only that the flowers require sun, but that too much moisture at the roots, without proper drainage, is apt to make the collar rot, in which case the plants damp off. The best way of guarding against both evils is to make

several sowings of the *Nemophila* throughout the year, so that there may be spring-flowering, summer-flowering, and autumn-flowering plants. For the first of these, *Nemophila insignis* succeeds exceedingly well treated like the other Californian annuals, as directed under the head of *Leptosiphon* (see p. 156). It would also probably succeed admirably, grown singly in a pot and frequently shifted, as directed for *Rhodanthe Manglesii* (see p. 199); and for the summer-flowering plants care must be taken to peg down the stems, so that they and the leaves may always cover the collar, and to prevent the earth about the roots from ever becoming quite dry.

4.—NEMOPHILA ATOMARIA, *Fisch. et Meyer.* THE SPECKLED NEMOPHILA.

ENGRAVINGS.—Bot. Reg. 1940; Swt. Brit. Flow. Gard. 2nd ser., t. 376; Paxt. Mag. of Bot. vol. v. p. 99; and our *fig.* 5, in Plate 37. | almost entire; peduncles axillary, elongated; corolla rotate, with a very pilose bottom, and obovate segments; placentas about 10-ovulate; seeds strophiolate, smooth.—(*G. Don.*)

DESCRIPTION, &c.—This species closely resembles *N. insignis*, except in the colour of the flower, which is white, dotted or speckled with very small purple spots, which are so dark that they appear at a little distance to be black. *N. atomaria* is a native of the Russian colony of Ross in New California, and seeds of it were sent to England from the botanic garden at St. Petersburg in 1836. Like all the *Nemophilas*, it requires a shady situation, and to be grown in peat or some other very light soil; and indeed its culture may be exactly the same as that of *N. insignis*.

OTHER SPECIES OF NEMOPHILA.

N. PARVIFLORA, *Doug.*

The flowers are said to be very small, but their colour is not mentioned. The species is a native of the North-west coast of America, and was introduced in 1826, but it appears to have been soon after lost, and not to be now in the country.

N. MENZIESII, *Hook. et Am.*

This species is said to have blue flowers, and to be a native of Chili, but it does not appear to have been introduced.

GENUS III.

EUTOCA, *R. Br.* THE EUTOCA.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Corolla deciduous, ovarium pilose. Placentas linear, 4, or many-ovulate. Capsule half 2-celled.—(*G. Don.*)

1.—EUTOCA VISCIDA, *Benth.* THE CLAMMY EUTOCA.

SYNONYME.—*E. viscosa*, *Hook.*

ENGRAVINGS.—Bot. Reg. t. 1808; Bot. Mag. t. 3572; Swt. Brit. Flow. Gard. 2nd ser., t. 368; Bot. Gard. No. 569; and our *fig.* 2, in Plate 37.

SPECIFIC CHARACTER.—Clothed with clammy pilli; stem erect, branched; leaves cordate-ovate, a little angular, serrated; racemes elongated, forked and simple; placentas many-ovulate.—(*G. Don.*)

DESCRIPTION, &c.—An upright coarse-growing plant, with flowers of a most vivid and intensely dark blue. The leaves are coarse and of a dull green, and the whole plant is entirely covered with clammy hairs, which, as

Dr. Lindley observes in the Bot. Reg., have "little black heads filled with a viscid secretion, and stick to the fingers like those of the Henbane; these are so crowded about the pedicels as to give them quite a sooty appearance." With regard to the flowers, Dr. Lindley observes in the same place that he knows "of no plant better adapted for bouquets; for it will go on growing and flowering in water for two or three weeks after being gathered." This species is a native of California, where it was found by Douglas, and introduced in 1834. The seeds should be sown in very poor gravelly or sandy soil, to prevent the plants from producing more leaves than flowers. The plants are quite hardy, and require no other care.

2.—EUTOCA FRANKLENII, *R. Br.* CAPTAIN FRANKLIN'S EUTOCA.

ENGRAVINGS.—Bot. Mag. t. 2985; and our *fig. 4*, in Plate 37.

SPECIFIC CHARACTER.—Erect; leaves pinnatifid, or bipinnatifid; ovula 20 or more to each placenta.—(*G. Don.*)

DESCRIPTION, &c.—This species has small pale blue flowers, produced in racemes, arising from the axils of the leaves, and a good deal resembling those of a *Polemonium*. The flowers themselves, though small, are pretty, from the bright clear blue of the corolla contrasting strongly with the golden hue of the anthers. The stem of the plant is erect, and rather stiff, having scarcely any branches, and the root is fusiform with very few fibres. It is a very interesting plant, Sir W. J. Hooker observes in the Bot. Mag., from its having been "discovered by Dr. Richardson during the first over-land arctic expedition, growing abundantly amongst trees that had been destroyed by fire, on the banks of the Mississippi," and also by Mr. Drummond, "in burnt woods, extending from the Great Rapid to the Rocky Mountains." It was introduced in 1827, but we fear it is lost, as we do not know where seeds of it are now to be procured.

3.—EUTOCA DIVARICATA, *Benth.* THE SPREADING EUTOCA.

ENGRAVING.—Bot. Reg. t. 1784.

SPECIFIC CHARACTER.—Stems dichotomously divaricate; leaves all ovate, undivided; placentas 12—20-ovulate.—(*Benth.*)

DESCRIPTION, &c.—A very pretty little plant, with bright violet flowers softening into white in the centre. It has a decumbent spreading stem, but it will not bear pegging down so as to cover a bed, on account of the brittleness of its stems. It is a native of California, and was introduced in 1835.

4.—EUTOCA MENZIESII, *R. Br.* MR. MENZIES' EUTOCA.

SYNONYMES.—*E. multiflora*, *Doug.*; *E. congesta*, *Lehm.*

ENGRAVINGS.—Bot. Reg. t. 1180; Swt. Brit. Flow. Gard. 2nd ser., t. 334; and our *fig. 3*, in Plate 37.

SPECIFIC CHARACTER.—Erect, hispid; leaves linear, or lanceolate, quite entire, sometimes trifid, or pinnatifid; placentas 20, or many-ovulate.—(*G. Don.*)

DESCRIPTION, &c.—A very beautiful species, with a profusion of violet-coloured flowers. Like all the Eutocas, it produces a great quantity of seeds; the name of *Eutoca* signifying fruitful, and that circumstance constituting the chief botanical difference between the genera *Eutoca* and *Nemophila*. *E. Menziesii* was found by Douglas on the banks of the Columbia, growing in open situations, fully exposed to the sun; and it was named by Dr. Brown in compliment to our much esteemed friend Archibald Menzies, Esq. It was introduced in 1826. Seeds of this species are common in the seed-shops, and they only require sowing in a dry sandy soil, and in an open situation exposed to the sun. As the Eutocas do not thrive in stiff soil, whenever the natural soil of the garden in which they are to be sown is of that nature, a barrowful of sand should be procured, and a pit dug in

the border about a foot in diameter, and to the same depth, which should be filled with sand, mixed with a small proportion of the common soil of the garden, and in which the seeds of the *Eutoca* should be sown. This should be done wherever a patch of these flowers is required; and a similar hole should be dug and filled with peat for every patch of *Nemophilas*. *Eutoca Menziesii* is of a compact and somewhat dwarf habit of growth, and from this circumstance, and the profusion of its flowers, it is well adapted to form a mass of colour in one of the beds of a regular flower-garden.

5.—EUTOCA WRANGELIANA, *Fisch. et Meyer*. BARON WRANGEL'S EUTOCA.

ENGRAVINGS.—Swt. Brit. Flow. Gard. 2nd Ser., t. 362; Paxt. Mag. of Bot., vol. 5, p. 199; and our *fig. 1*, in Plate 37. * | entire. Corollas about twice as long as the calyx, and about equal in length to the stamens. Placentas 8—10-ovulate.—(*G. Don.*)

SPECIFIC CHARACTER.—Diffuse, downy. Leaves ovate, acute, quite

DESCRIPTION, &c.—A very handsome species, with dark purplish blue flowers, and a dwarf compact habit of growth. It is a native of the Russian colony of Ross in New California, and seeds were sent to this country from St. Petersburg in 1836. It was named by Fischer and Meyer, in honour of a Swedish nobleman, who was employed by the Russian government in exploring the North West coast of North America. Seeds are common in the seed-shops, and the culture is the same as that of the other Californian annuals (see p. 156.) When sown in the open border, it will grow well in any common garden soil.

OTHER SPECIES OF EUTOCA.

E. DOUGLASSII, *Benth.*

The leaves grow nearly all near the root, and the flower-stalks ascend nearly naked, with a cluster of flowers at the top. The flowers are of the same size and colour as those of *Nemophila insignis*. A native of California, not yet introduced.

E. CUMINGII, *Benth.*

Has small flowers, and is a native of the Andes of Chili.

E. BRACHYLOBA, *Benth.*

This is probably the same species as *E. Cumingii*, modified by its being a native of a colder climate, as it was found wild in California by Douglas. Neither of these species is introduced.

E. PARVIFLORA, *R. Br.*; PHACELIA PARVIFLORA, *Pursh*; POLEMONIUM DUBIUM, *Willd.*

The flowers are small, and of a pale blue; and the plant, which is a native of Pennsylvania, was introduced in 1826.

E. MEXICANA, *Benth.*

Resembles *E. parviflora*, but has larger flowers. A native of Mexico, not introduced.

E. GRANDIFLORA, *Benth.*

Flowers an inch and a half in diameter; leaves large and wrinkled. A native of California, where it was found by Douglas. Introduced in 1838; there are seeds at Charlwood's



1 *Phacelia venifolia*. — 2. *Phacelia congesta*. — 3 *Phacelia tamaricifolia*
— 5. *Corinthe major*. — 6. *Echium australe*.

E. PHACELIOIDES, *Benth.*

Closely resembling a species of *Phacelia*. A native of California.

E. LOASÆFOLIA, *Benth.*

Erect, and with almost the habit of a *Phacelia*. Every part of the plant is covered with long stiff hairs intermixed with clammy down. It is a native of California, where it was discovered by Douglas.

GENUS IV.

PHACELIA, *Juss.* THE PHACELIA.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Corolla deciduous. Ovarium pilose. Placentas linear, 2-ovulate. Capsule falsely two-celled.—(*G. Don.*)

DESCRIPTION, &c.—The difference between this genus and *Eutoca* is very slight; and it consists principally in the greater quantity of seeds contained in the capsule of the *Eutocas*. The name *Phacelia* signifies a fascicle, or bundle, and it was given to the genus in reference to the flowers being produced in fascicles.

1.—PHACELIA TANACETIFOLIA, *Benth.* THE TANSY-LEAVED PHACELIA.

ENGRAVINGS.—Bot. Reg. t. 1696; Bot. Mag. t. 3703; Swt. Brit. Flow. Gard. 2nd Ser. t. 360; and our *fig.* 3, in Plate 38. Leaves bipinnatifid. Leaflets oblong, dentately pinnatifid. Calycine segments oblong-linear, hispid. Stamens exserted.—(*G. Don.*)

SPECIFIC CHARACTER.—Clothed with scabrous pubescence or hispid.

DESCRIPTION, &c.—The appearance of this plant is very remarkable from the bundles or rather strings of flowers which appear to have been just unrolled, the long black hairs with which every part of it is covered, and the stamens which project far beyond the corollas of the flowers. Indeed, though the plant is by no means remarkable for its beauty, few persons see it for the first time without being struck with it. The flowers are of a pale purple or violet, and are pretty in themselves; but the whole plant has a coarse and weedy aspect. It is quite hardy, and will thrive in any soil and situation; and as the stem is sufficiently strong to keep it erect, it requires no care but sowing. A slight variety of this species is sometimes called *P. bipinnatifida* in the nurseries.

2.—PHACELIA CONGESTA, *Hook.* THE CROWDED-FLOWERED PHACELIA.

ENGRAVINGS.—Bot. Mag. t. 3452; Swt. Brit. Flow. Gard., 2nd Ser. t. 327; Bot. Gard. t. 632; and our *fig.* 2, in Plate 38. bristly hairs. Leaves bipinnatifid. Segments ovate-oblong, acute, deeply serrated; calycine segments linear-lanceolate, acute. Stamens exserted.—(*G. Don.*)

SPECIFIC CHARACTER.—Clothed with hairy down, intermixed with

DESCRIPTION, &c.—A pretty plant with pale blue flowers, and almost trifid leaves. It is a native of Texas, in Mexico, whence it was sent home by Drummond; it is however quite hardy, and will grow in any soil and situation.

P. VINIFOLIA, *Part. Mag. of Bot.* vol. v. p. 121; and our *fig.* 1, in Plate 38.

This plant appears very nearly allied to *P. congesta*, and is probably only a variety of that species. The specific name should probably have been *Vitifolia*, signifying Vine-leaved. The seed from which it was raised was sent by Drummond from Texas; and the plant was first raised in the Manchester Bot. Gard.

CHAPTER XXXVIII.

BORAGINACEÆ.

ESSENTIAL CHARACTER.—Calyx usually 5-parted, persistent. Corolla monopetalous, usually 5-cleft, imbricate in æstivation. Stamens usually 5. Fruit of four distinct or combined achenia. Albumen none. Herbs or shrubs, harsh from asperities, with alternate exstipulate leaves, and having the flowers generally disposed in one sided spikes or racemes, seldom in panicles or corymbs.—(*G. Don.*)

GENUS I.

CERINTHE, *Tourn.* HONEYWORT.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Corolla tubular; throat naked. Anthers hastate, connected, having the lobes spirally twisted at the base. Nuts 2, 2-celled, or 4, combined by twos, imperforated at the base.—(*G. Don.*)

1.—CERINTHE MAJOR, *Lin.* THE GREATER HONEYWORT.

SYNONYMES.—*C. glabra*, *Mill.*; *C. glauca*, *Manch.*

ENGRAVINGS.—*Bot. Mag* t. 333; and our *fig.* 5, in Plate 38.

SPECIFIC CHARACTER.—Stem branched. Leaves cordate-ovate,

denticulately ciliated. Corollas ventricose at top, 5-toothed. Teeth very short, acuminate, reflexed.—(*G. Don.*)

DESCRIPTION, &c.—A plant, the flowers of which are more curious than beautiful; but they are said to abound in honey, and hence the English name *Cerint* signifies Wax-flower. The species is a native of the south of Europe and Barbary; and it was formerly so common in Italy, that Virgil calls it, “that ignoble weed *Cerint*.” It was introduced in 1596. Seeds are common in all the seed-shops, and no particular care is required either in sowing them, or in the after culture of the plant.

OTHER SPECIES OF CERINTHE.

C. ASPERA, *Roth.*

This species is distinguished by its leaves being rough with white warts. The corollas are long, and yellow, with a brownish purple tube. It is a native of the south of Europe, and was introduced in 1633.

C. RETORTA, *Smith.*

This species has its leaves beset with white warts on both surfaces. It is a native of the Peloponnesus, and was introduced in 1825. The flowers are small, with a yellow tube and a violet-coloured limb. There are two other annual species, *C. purpurea* and *C. alpina*, but they have not been introduced.

GENUS II.

ECHIUM, *Pliny.* VIPER'S BUGLOSS.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Corolla funnel-shaped. Throat wide, naked. Segments of the limb in many species unequal. Nuts turbinate, gigartoid, scabrous.—(*G. Don.*)

DESCRIPTION, &c.—All the species have showy flowers, somewhat variable in colour, and frequently changing from blue to pink, like the different kinds of Bugloss (*Anchusa*). The name of *Echium* is derived from *echis*,

a viper; and the seeds of the plant are not only supposed to resemble the head of that reptile, but the juice of any plant of the genus was formerly thought a certain cure for a viper's bite.

1.—ECHIUM AUSTRALE, *Lam.* THE SOUTHERN VIPER'S BUGLOSS.

SYNONYMES.—*E. diffusum*, *Smith*; *E. grandiflorum*, *Desf.*; *E. maceranthum*, *Rœm. et Schultz.*

ENGRAVINGS.—*Swt. Brit. Flow. Gard.* t. 101; and our *fig.* 6, in Plate 38.

SPECIFIC CHARACTER.—Stem herbaceous, pilose. Leaves ovate, attenuated at both ends. Corollas equalling the stamens, which are villous at the apex.—(*G. Don.*)

DESCRIPTION, &c.—This plant grows about a foot or eighteen inches high, with numerous stems, rising from the same root, so as to make the plant spread widely. The leaves are ovate, tapering at both ends; and with the upper side covered with small white tubercles, while the under side, which is strongly veined, is clothed with small rigid hairs. The flower-stalks have the flowers all on one side, and lengthen as the flowers expand. The flower is large, tubular, and of a reddish purple, changing to blue as it fades, strongly ribbed, and hairy. The stamens are shorter than the tube of the flower, but the style, which is red, projects beyond it. This species is a native of the south of Europe, and was introduced in 1824, but modifications of it under different names have been introduced at various periods. The seeds may be procured at Charlwood's, and other seed-shops, and they should be sown in patches of only a few seeds together, in March or April; thinning the plants out when they come up so as not to leave more than three in a patch, and these may be afterwards again thinned out to one; or rather, the three may be taken up and spread widely apart. The reason for this is, that when the plants are allowed room, they will spread widely in all directions; but when left near together, they become drawn up and straggling. All the *Echiums* should be grown in a warm dry border, open to the sun. *E. grandiflorum*, *Desf.*, appears to be the same as this species.

2.—ECHIUM VIOLACEUM, *Lin.* THE VIOLET-COLOURED VIPER'S BUGLOSS.

SYNONYMES.—*E. creticum*, *Lam.*, not of *Lin.*; *E. floribundum*, *Leh.*; ? *E. plantagineum*, *Lin.*

SPECIFIC CHARACTER.—Stem herbaceous, branched; lower leaves oblong; upper ones lanceolate, cordate at the base, stem-clasping, hispid from strigæ; spikelets simple, elongated; stamens about equal in length to the corolla, which is irregular.—(*G. Don.*)

DESCRIPTION, &c.—The principal apparent difference between this species and *E. australe* is, that the flowers are blue with a tinge of violet, instead of reddish: there is, however, another rather important difference, which is, that the root of *E. violaceum* is fusiform, and that consequently this species will not bear transplanting, except when very young. It is a native of the south of Europe, and was introduced in 1658. The culture is the same as for *E. australe*, except that three plants may be left in a patch together; and that, as they grow from one foot to two feet high, they look best tied to slender stakes. Seeds may be had at Charlwood's, and other seed-shops. *E. plantagineum* differs very little from this species, except in the colour of the flowers, which are either white or purple, and always reddish before they expand. The flowers of *E. floribundum* are blue, and the plant is a native of North America.

OTHER SPECIES OF ECHIUM.

E. MARITIMUM, *Willd.*

Flowers blue. A native of the shores of the Mediterranean. Introduced in 1815.

E. TENUE, *Roth.*

Flowers small, and of a fine blue; reticulately veined. A native of Barbary. Introduced in 1824.

E. PARVIFLORUM, *Mæch.*

Root fibrous. Stems many, and procumbent. Tubercles on the leaves white, and hairy. Flowers blue. A native of the shores of the Mediterranean. Introduced in 1798.

GENUS III.

NONEA, *Mæch.* THE ALKANET.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx at length inflated. Corolla funnel-shaped; tube straight; throat bearded. Stamens inclosed. Stigma simple. Nuts with parallel stripes.—(*G. Don.*)

DESCRIPTION, &c.—The species now included in the genus *Nonea* were removed from the genus *Anchusa*, because their flowers are tube-shaped like the *Convolvulus*, while those of the *Anchusa* are flat or salver-shaped; and because there is a difference in the fruit. The root of one of the perennial species is used for dyeing.

1.—NONEA VERSICOLOR, *Swt.* THE CHANGEABLE-COLOURED ALKANET.

SYNONYMS.—*Anchusa versicolor*, *Steo.*; *Lycopsis rosea*, *Reich.*
 ENGRAVING.—*Bot. Mag.* t. 3477.

SPECIFIC CHARACTER.—Pilose or strigose; stems prostrate; leaves obtuse; corollas equal.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of this plant are remarkable for the striking changes of colour that they undergo. They are red in the bud; then they turn to reddish-purple when they first expand; and afterwards to a bright blue with a yellow eye, like a small convolvulus, which indeed the shape of the flower greatly resembles. The plant is a native of Caucasus, and was introduced in 1820. Seeds may be purchased in the seed-shops under the name of *Anchusa versicolor*, and they may be sown in any common garden soil, as they are so hardy that they will grow in any soil and situation.

OTHER SPECIES OF NONEA.

There are several other annual species, with pink, yellow, white, very dark purple, and striped flowers, all of which are said to have been introduced, but none of them are common in British gardens. The most remarkable are:—*N. picta*, with blue flowers, marked with dark blue veins; a procumbent plant, introduced in 1800 from Siberia. *N. ciliata*, a native of the Levant, introduced in 1804, and having dark yellow flowers. *N. rosea*, a procumbent plant, with rose-coloured flowers, introduced from Siberia in 1823. *N. decumbens*, with very dark purple flowers, having a yellowish tube; a native of the south of Europe, introduced in 1686; and *N. lutea*, a native of France, with pale yellow flowers; introduced in 1805.



1. *Penstemon crinitus* 2. *Penstemon exilis* 3. *Penstemon canescens*
 4. *Penstemon laevis* 5. *Penstemon fulvus* 6. *Penstemon rupestris*

CHAPTER XXXIX.

LABIATÆ.

ESSENTIAL CHARACTER.—Calyx persistent, 5-cleft, or five to ten-toothed, regular or bilabiate. Corolla monopetalous, tubular, with a bilabiate limb. Stamens 4, didynamous, two of which are sometimes sterile, inserted under the sinuses of the lower lip. Stigma bifid. Fruit of 4 or fewer distinct achenia. Albumen usually wanting. Leaves opposite, and exstipulate. Flowers opposite, verticillate, or capitate, or spicate; racemose or solitary; axillary or terminal.—(*G. Don.*)

GENUS I.

SALVIA, *Lin.* THE SAGE.*Lin. Syst.* DIANDRIA MONOGYNIA.GENERIC CHARACTER.—Connective drawn out under the insertion, and naked or bearing a cell behind.—(*G. Don.*)1.—SALVIA FOLIOSA, *Benth.* THE LEAFY SAGE.SYNONYMES.—*S. rhombifolia, Ruiz et Pavon*; *S. pilosa, Vahl.*ENGRAVINGS.—*Bot. Reg.* t. 1429; and our *fig. 5*, in Plate 39.

SPECIFIC CHARACTER.—Stem herbaceous, erect, branched, pubescent; leaves petiolate, broad-ovate, or rhomboid, subcordate at the base, pubescent; floral leaves ovate-lanceolate, deciduous; racemes simple,

few-flowered; whorls about 6-flowered, remote; calyx ovate, pubescent, the upper lip entire, and the teeth of the lower lip ovate, acute; corolla half as long again as the calyx; tube enclosed, ventricose; middle lobe of the lower lip emarginate; style glabrous.—(*G. Don.*)

DESCRIPTION, &c.—A rather pretty plant with blue flowers, a native of Mexico, whence it was sent to England in 1830 by Mr. Graham, to whom we are also indebted for *Salvia fulgens*, and other handsome species of the genus. It is quite hardy, and requires no other culture than sowing, and thinning out the plants if they should come up too thickly. We do not know where seeds can be obtained.

2.—SALVIA HORMINUM, *Lin.* THE PURPLE-TOPPED CLARY.SYNONYMES.—*S. colorata, Thore*; *Horminum sativum, Mill.*; *H. coloratum, Mæsch.*VARIETY.—*S. H. 2. rubra*, the red-topped Clary.

SPECIFIC CHARACTER.—Stem erect, villous. Leaves petiolate, oval-oblong, rounded at the base, or cuneated, obtuse, crenated, villous; superior ones ovate-cordate; floral leaves very broad, acute, permanent,

rather than longer than the calyxes; uppermost ones membranaceously dilated, coloured, comose. Racemes simple. Whorls distant, about 6-flowered. Calyx pubescent, reflexed in the mature state, and plicately striated; teeth of the lower lip lanceolate, acute. Corolla one-half longer than the calyx, with an enclosed tube.—(*G. Don.*)

DESCRIPTION, &c.—These plants are cultivated not for their flowers, but for the vivid colour of their bractæas, which in the species are of a bright purple, and in the variety, pink. The flowers are quite insignificant. Seeds are common in the seed-shops, and when once sown, the plants require no after culture.

OTHER ANNUAL SPECIES OF SALVIA.

S. VIRIDIS, Lin.

This species closely resembles the purple and red-topped Clary, except that its bractæas are of a vivid light green. The flowers are small and blue. It is a native of the shores of the Mediterranean, in dry, gravelly places, and was introduced in 1759.

S. LANCEOLATA, Willd.

A native of Mexico, with narrow leaves and blue flowers; introduced in 1813.

There are several other species marked as annuals in botanical books, but most of them have not been introduced; the others are, properly speaking, biennials, as they never flower till the second year after sowing.

GENUS II.

DRACOCEPHALUM, *Lin.* THE DRAGON'S HEAD.*Lin. Syst.* DIDYNAMIA GYMNOSPERMIA.GENERIC CHARACTER.—Calyx bilabiate, or the upper tooth is large, or the bracteas are ciliate toothed.—(*G. Don.*)1.—DRACOCEPHALUM CANESCENS, *Lin.* THE WOOLLY-LEAVED DRAGON'S HEAD.SYNONYME.—*Zornia canescens*, *Mench.*ENGRAVINGS.—*Swt. Brit. Flow. Gard.* t. 38; and our *fig. 3*, in Plate 39.

SPECIFIC CHARACTER.—Stem erectish, branched, clothed with fine hoary tomentum. Leaves petiolate, lower ones ovate or oblong, rather

deeply crenated; floral ones lanceolate, almost quite entire, all canescent from fine tomentum. Whorls distinct, disposed in long racemes, usually 6-flowered. Bracteas ovate-cuneate, aristately-toothed. Calyx hoary, having the upper tooth ovate, and the lower one lanceolate. Corolla twice as long as the calyx.—(*G. Don.*)

DESCRIPTION, &c.—A very showy, vigorous-growing plant, about two feet high, and spreading in proportion. The leaves are white, from the down with which they are clothed; and the flowers, which are of a very dark purplish blue, are produced in great abundance. The species is a native of the Levant, whence it was introduced in 1711. The seeds should be sown early in March, and the plants, when they come up, should be transplanted so as to stand singly, as they require a great deal of room.

OTHER SPECIES OF DRACOCEPHALUM.

D. MOLDAVICUM, *Lin.*; MOLDAVICA PUNCTATA, *Mench.*

This species, which is generally called *Moldavian balm* in British gardens, has either blue or white flowers, and a very strong smell. It is a native of eastern Siberia, and it was introduced before 1596. The seeds, which are common in all the seed-shops, should be sown in the beginning of March, and the young plants pricked out singly.

There are several other kinds of annual *Dracocephalums*, but they differ very little from each other, and they are none of them common in British gardens.

GENUS III.

PHYSOSTEGIA, *Benth.* THE PHYSOSTEGIA.*Lin. Syst.* DIDYNAMIA GYMNOSPERMIA.GENERIC CHARACTER.—Calyx obscurely veined, inflated after florescence. Corolla much exerted, with an ample throat.—(*G. Don.*)PHYSOSTEGIA TRUNCATA, *Benth.* THE BLUNT-CALYXED PHYSOSTEGIA.ENGRAVINGS.—*Bot Mag.* t. 3494; and our *fig. 1*, in Plate 39.SPECIFIC CHARACTER.—Calyx truncate, obscurely 3—5-lobed. Lobes very broad, denticulated.—(*Benth.*)

DESCRIPTION, &c.—A very showy plant, growing nearly two feet high, and producing several spikes of its very elegant and delicately-marked flowers. It is a native of Texas, where it was found by Drummond in 1834, and seeds sent to the Glasgow Botanic Garden. Though at first supposed to be a perennial, it proves to be decidedly an annual, and only requires the same culture as the annual kinds of *Dracocephalum*.

GENUS IV.

MOLUCELLA, *Lin.* MOLUCCA BALM.*Lin. Syst.* DIDYNAMIA GYMNOSPERMIA.GENERIC CHARACTER.—Limb of calyx ample, oblique, with 5—10 mucrones or spines. Filaments naked at the base.—(*G. Don.*)1.—MOLUCELLA LEVIS, *Lin.* THE SMOOTH MOLUCCA BALM.SYNONYME.—*Molucella levis*, *Riv.*ENGRAVINGS.—*Bot. Mag.* t. 1852; and our *fig.* 4, in Plate 39.SPECIFIC CHARACTER. Limb of calyx large, membranaceous, sub-pentagonal, with 5 very short mucrones or teeth.—(*G. Don.*)

DESCRIPTION, &c.—The pretty pink and white flowers appear seated in their large calyxes; and underneath each calyx is a singular whorl of spiny bractæ. The whole plant has a strong smell. It is a native of Syria, and it was first cultivated in England in 1570, by L' Obel, botanist to James I. It requires to be sown on a hotbed, and planted out in May, when it will flower in July or August.

2.—MOLUCELLA SPINOSA, *Lin.* THE SPINY MOLUCCA BALM.SYNONYMS. — *M. armata*, *Sieb.*; *Chasmonia incisa*, *Presl.*;
Molucca spinosa, *Manch.*ENGRAVING.—*Bot. Reg.* t. 1244.SPECIFIC CHARACTER.—Limb of calyx short, coriaceous, sub-bilabiate, with 8 spines.—(*G. Don.*)

DESCRIPTION, &c.—A very coarse-growing plant, with a square stem, and white gaping flowers, with curiously cut, thorn-like calyxes. The leaves are on long footstalks, and they are deeply cut, and covered with spines. It is a native of the shores of the Mediterranean, and was introduced in 1596. It has, however, been lost and re-introduced several times. It is quite hardy, and only requires sowing in the open air. We do not know where seeds of this species are to be obtained.

GENUS V.

AMETHYSTEA, *Lin.* THE AMETHYSTEA.*Lin. Syst.* DIANDRIA MONOGYNIA.GENERIC CHARACTER.—Superior stamens abortive.—(*G. Don.*)DESCRIPTION, &c.—This genus differs very slightly from that of *Teuerium*, the Germander.AMETHYSTEA CÆRULEA, *Lin.* THE BLUE AMETHYSTEA.ENGRAVINGS.—*Bot. Mag.* t. 2448; and our *fig.* 2, in Plate 39.

SPECIFIC CHARACTER.—Herb erect, branched, glabrous, often bluish. Leaves petiolate, 3—5-parted; segments oblong-lanceolate, deeply toothed; floral leaves smaller; upper ones minute. Cymes pedun-

cled, loose, racemosely panicled. Bractæ minute. Calyxes erect, bluish, quite glabrous, with lanceolate, acute teeth. Corolla blue, scarcely exceeding the calyx.—(*G. Don.*)

DESCRIPTION, &c.—The stem is square and purplish, growing from one foot to two feet high; the leaves are three-parted and on channelled footstalks; the flowers are small, blue, and in leafy corymbs; and the whole plant is very fragrant. It is a native of Siberia, introduced in 1759, and quite hardy, growing well in any soil or situation. Seeds are in all the seed-shops; and the only care necessary is to transplant the young plants while in the seed-leaf, as they will not bear it afterwards.

CHAPTER XL.

PEDALINEÆ.

ESSENTIAL CHARACTER.—Calyx 5-parted. Corolla bilabiate. Stamens 4, didynamous. Ovarium surrounded by a glandular disk. Stigma undivided. Fruit drupaceous, dry, usually muricated, of several spurious cells. Seeds pendulous. Albumen none. Erect branched herbs with opposite leaves, and axillary, solitary, bibracteate flowers.—(*G. Don.*)

DESCRIPTION, &c.—All the plants in this order are remarkable for the oiliness of their seeds. The Indian grain Sesame mentioned in the story of the Forty Thieves in the Arabian Nights' Entertainments belongs to it. The order takes its name from the genus *Pedaliūm* (Pedalion signifying the rudder of a ship), in reference to the dilated angles of the fruit.

GENUS I.

MARTYNIA, *Houst.* THE MARTYNIA.

Lin. Syst. DIDYNAMIA ANGIOSPERMIA.

GENERIC CHARACTER.—Drupe oblong, bicornute at the apex; the anterior horn sulcately-toothed, containing a 4-celled nut; cells few-seeded.—(*G. Don.*)

DESCRIPTION, &c.—The genus *Martynia*, which was named by Houston in honour of Professor Martyn, editor of Miller's Dictionary, &c., is nearly allied to the genera *Bignonia* and *Tecoma*; and the species are remarkable for their showy flowers, horny capsules, and oily seeds.

1.—MARTYNIA PROBOSCIDEA, *Glox.* THE HORNY, OR PROBOSCIS-LIKE MARTYNIA.

SYNONYMES.—*M. alternifolia*, *Lam.*; *M. annua*, *Lin.*; *M. Louisiana*, *Mill.*; *Proboscidea Jussieu*, *Schmidt.*

VARIETY.—*M. p.* 2 *triloba*, *G. Don*; *M. triloba*, *Cham. et Schlecht.*, smaller than the species.

ENGRAVINGS.—*Bot. Mag.* t. 1056; and our *fig.* 1, in Plate 40.

SPECIFIC CHARACTER.—Stem branched; leaves alternate, lobed, cordate at the base; stamens 4, all fertile.—(*G. Don.*)

DESCRIPTION, &c.—A very curious plant, covered with glutinous hairs. The flowers are somewhat bell-shaped, and are dotted and variegated with several shades of colour; the lobes of the stigma are irritable, and close when touched. The capsules or seed-vessels are a kind of nut, quite hard and woody, and terminating in two beaks or horns. The plant was a native of Louisiana (where it was first discovered on the banks of the Mississippi), and Mexico, and was introduced about 1759; seeds of it being sent by Richard, the French king's gardener at Versailles, to the celebrated Miller, who was then curator of the botanic garden at Chelsea. It was first kept in the hothouse, and treated as a half-hardy annual; but it is now found to succeed in the open border, if sown in April or May, in a light rich soil and warm situation. The seeds, like those of all oily plants, do not keep well; and thus, generally, only a few of those sown come up. The plant has a strong erect stem, and does not require sticking. Seeds may be procured at Carter's, Holborn, and other seed-shops.

2.—MARTYNIA LUTEA, *Lindl.* THE YELLOW MARTYNIA.

ENGRAVINGS.—*Bot. Reg.* t. 934; and our *fig.* 3, in Plate 40.

SPECIFIC CHARACTER.—Stem branched, clothed with glandular down.

Leaves opposite, cordate-orbicular, toothed, clothed with glandular down. Beaks much longer than the pericarp.—(*G. Don.*)

DESCRIPTION, &c.—The habit of the plant resembles that of *M. proboscidea*, but the flowers are of a bright orange yellow. It is a native of Brazil, introduced in 1825. The culture is the same as that of the preceding species.



3.—MARTYNIA DIANDRA, *Glox.* THE DIANDROUS MARTYNIA.SYNONYMS.—*M. angulosa*, *Lam.*; *M. reliq.*, *Houst.*ENGRAVINGS.—Bot. Reg. t. 2001; Bot. Rep. t. 575; and our *fig.* 2, in Plate 40.SPECIFIC CHARACTER.—Stem branched; leaves opposite, lobed, cordate at the base; stamens 4, two of them sterile.—(*G. Don.*)

DESCRIPTION, &c.—The spike of flowers of this species grows differently to that of all other kinds; and instead of being terminal, it always springs from a fork between the stem and branches. The flowers are very curiously marked. The leaves and calyxes are of a pale green, and the latter have a sort of involucre formed of two delicate membranous bracteas of a beautiful pale pink. The whole plant has rather an unpleasant smell. It is a native of Vera Cruz, Mexico, and was introduced in 1731. It is rather more tender than the other species, but in favourable situations it grows above two feet high, while the others rarely exceed a foot or eighteen inches. It should be grown in rich light soil, in a warm border in front of a south wall.

M. LONGIFLORA, *Lin.*; M. CAPENSIS, *Glox.*

The flowers of this species are very long, and purple. It is a native of the Cape of Good Hope, and was introduced in 1781, but has long been lost to our gardens.

CHAPTER XLI.

SCROPHULARINEÆ.

ESSENTIAL CHARACTER.—Calyx persistent, 4 or 5-parted. Corolla rarely baccate, 2-celled, 2 or 4-valved, many-seeded. Albumen deciduous, bilabiate. Stamens 2 or 4; when the latter number, copious. Herbs very various in habit and inflorescence, with generally usually didynamous. Stigma simple or two-lobed. Fruit capsular, opposite leaves.—(*G. Don.*)

GENUS I.

COLLINSIA, *Nutt.* THE COLLINSIA.*Lin. Syst.* DIDYNAMIA ANGIOSPERMIA.GENERIC CHARACTER.—Corolla gibbous above the base; limb very irregular. Capsule 2-valved; valves bipartite.—(*G. Don.*)

DESCRIPTION, &c.—A genus of very handsome Californian annuals, named by Professor Nuttall in honour of Mr. Zaccheus Collins, Vice-president of the Academy of Natural Sciences in Philadelphia.

1.—COLLINSIA VERNA, *Nutt.* THE SPRING-FLOWERING COLLINSIA.

SYNONYMS.—*C. grandiflora*, *Lindl.*; *Antirrhinum tenellum*, *Pursh.*
ENGRAVINGS.—Sw. Brit. Flow. Gard. t. 220; Bot. Reg. t. 1107;
Bot. Gard. No. 391; and our *fig.* 1, in Plate 41, under the name of
C. grandiflora.

SPECIFIC CHARACTER.—Stem erect, branched. Leaves lanceolate,
lower ones sometimes spatulate. Pedicels verticillate; calyx
about half the length of the corolla.

DESCRIPTION, &c.—*Collinsia verna* was the first species of the genus discovered, and it was found by Nuttall in the spring of 1810, growing in the alluvial soil on the borders of Lake Erie. He unfortunately lost the specimens he gathered, but the plant was found about the same period on the banks of the Missouri and Mississippi rivers by Mr. John Bradbury. In the spring of 1816, Nuttall undertook another journey in search of this plant; and after seeking for it in vain, during a journey of more than a hundred miles, he at last

succeeded in finding a withered specimen on the banks of the Ohio, from which he procured some seed. In 1826 a kind of *Collinsia* was found on the banks of the Columbia, which was at first supposed a different species, and was described in the Bot. Reg. as *Collinsia grandiflora*; but it has been since found that the differences discoverable between the specimens are not sufficiently constant to be relied on. The plant is quite hardy and will grow in any soil or situation, but it does best treated as directed for *Leptosiphon*. When sown in spring it should be in February, as, if the sowing be delayed till the latter end of March or the beginning of April, the plants generally wither without flowering. All the *Collinsias* bear cold much better than heat. A rather curious proof of the hardiness of this species happened a year or two ago in the garden of a friend of ours. Some *Collinsia verna* had been sown in the autumn, and after it had flowered the plants were pulled up and thrown on a heap of very stiff clay which had been provided for puddling a pond. This was about November, and in April, when the clay was wanted for use, it was found covered with a splendid mass of flowers of this species, which were as fine, and as brilliant in colour, as though the seeds had been sown in the best prepared bed. This species was introduced in 1826, and seeds of it are common in the seed-shops both as *C. verna* and *C. grandiflora*.

2.—COLLINSIA BICOLOR, *Benth.* THE TWO-COLOURED COLLINSIA.

ENGRAVINGS.—Bot. Reg. t. 1734; Bot. Mag. t. 3488; Swt. Brit. Flow. Gard. 2nd Ser. t. 307; Bot. Gard. No. 689; Paxt. Mag. of Bot. vol. 3, p. 195; and our *fig.* 3, in Plate 41.

SPECIFIC CHARACTER.—Stem erect, downy. Leaves glabrous, ovate-lanceolate, subcordate at the base. Pedicels verticillate, racemose.—(*G. Don.*)

DESCRIPTION, &c.—A very showy annual, but one which differs so much, according to the soil and situation in which it is grown, as scarcely to be recognised as the same plant. If the seeds are sown in autumn, as directed for the *Leptosiphon*, and transplanted, or rather removed, in spring to a bed of rich and rather strong soil, where the roots will be shaded from the sun and kept rather moist, the plant will grow two feet high with a strong erect stem, and will produce a profusion of splendid flowers, large in size and clear and brilliant in colour; while if the seeds are sown in April or May, about the usual time of sowing flower-seeds, the flowers will be poor and the stems weak; and if the roots are exposed to the sun, the plants will wither and die without any apparent cause, in the same manner as those of *Nemophila insignis* do under similar circumstances (see p. 217). This species differs considerably from *C. verna*, particularly in the shape of the leaves, and in the colour and disposition of the flowers. It is a native of California, where it was discovered by Douglas in 1833; and notwithstanding its recent introduction, seeds are already common in all the seed-shops.

3.—COLLINSIA HETEROPHYLLA, *Graham.* THE VARIABLE-LEAVED COLLINSIA.

ENGRAVINGS.—Bot. Mag. t. 3695; and our *fig.* 2, in Plate 41.

SPECIFIC CHARACTER.—Lower leaves trilobate; upper ones ovate-acuminate. Peduncle shorter than the flower. Calyx covered with

a glandular pubescence. Segments of the corolla rounded at the apex, crenate, middle tube of the lower lip subacute, border of the upper lip nearly entire.—(*Graham.*)

DESCRIPTION, &c.—This species very closely resembles *C. bicolor*, but the flowers are larger, and differ slightly in the colour. The lower leaves are also three-lobed; but altogether the botanical differences do not appear more than were supposed to exist between *C. verna* and *C. grandiflora*. The general appearance of the plants, however, is tolerably distinct. The culture of both species is the same. *C. heterophylla* is a native of California, where it was found on the banks of the Columbia, and it was introduced in 1838. Seeds may be had at Carter's, but they are at present rare in the seed-shops.



1. *Collinsia grandiflora*. — 2. *Collinsia heterophylla*. — 3. *Collinsia bicolor*.
4. *Collinsia parviflora*.



1. *Schizanthus pinnatus* var. *humilis* — 2. *Schizanthus pinnatus* var. *humilis* — 3. *Schizanthus pinnatus* var. *humilis* — 4. *Schizanthus pinnatus* var. *humilis* — 5. *Schizanthus pinnatus* var. *humilis* — 6. *Schizanthus pinnatus* var. *humilis* — 7. *Salpiglossis pinnata* — 8. *Salpiglossis pinnata* — 9. *Salpiglossis pinnata*.

4.—*COLLINSIA PARVIFLORA*, *Lindl.* THE SMALL-FLOWERED *COLLINSIA*.

ENGRAVINGS.—Bot. Reg. t. 1082 ; and our *fig.* 4, in Plate 41.

SPECIFIC CHARACTER.—Stem prostrate, downy. Leaves ovate-oblong, nearly entire, downy. Pedicels axillary, solitary, much longer than

the flowers. Segments of corolla acutish, entire. Calyx downy, about equal in length to the corolla.—(*G. Don.*)

DESCRIPTION, &c.—A little insignificant plant scarcely worth growing. A native of the banks of the Columbia, introduced in 1827. The stem is prostrate, and consequently, as one plant covers a considerable space, the seeds should be sown very sparingly, or the plants thinned out as soon as they appear. In other respects the culture is the same as for the other species.

Several other *Collinsias* are said to have been discovered, but they have not yet been introduced.

GENUS II.

SCHIZANTHUS, *R. et P.* THE SCHIZANTHUS.

Lin. Syst. DIANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx 5-parted. Limb of the corolla 4-parted, lobed, irregular. Stamens 4, two upper ones sterile. Stigma compressed, obtuse.—(*G. Don.*)

DESCRIPTION, &c.—A genus of very beautiful flowers, comprised by Professor De Candolle in the order *Solanaceæ*; but placed by most botanists, among whom is Dr. Lindley, whose arrangement we have hitherto followed, in the order *Scrophularinæ*. The name of *Schizanthus* signifies literally cut-flower. The stamens of these plants are said to start forward when touched, and the stem and leaves are covered with glandular hairs, which give out a peculiar and acid secretion, a fact which was first discovered by Miss Murray. All the species require a light soil and abundance of light and air.

1.—*SCHIZANTHUS PINNATUS*, *Ruiz et Pav.* THE PINNATE-LEAVED *SCHIZANTHUS*.

ENGRAVINGS.—Bot. Reg. t. 725 ; Bot. Mag. t. 2404 ; and our *fig.* 1, in Plate 42.

VARIETY.—*S. p. 2. humilis*, *Lindl.* ; Bot. Reg. t. 157 ; Swt. Brit. Flow. Gard. 2d Ser. t. 197 ; Paxt. Mag. of Bot. vol. 2, p. 198 ; and our *fig.* 3, in Plate 42. Racemes of flowers crowded. A dwarf plant,

introduced in 1831 from Chili.

SPECIFIC CHARACTER.—Fructiferous peduncles inflexed at top, secund ; lateral segments of the lower lip of the corolla longer than the intermediate one, which is obcordate ; upper segment of the corolla emarginate.—(*G. Don.*)

DESCRIPTION, &c.—In favourable soils and situations this plant grows nearly two feet high, though with a slender stem that requires support, and which throws out numerous branches, each terminating in a panicle of flowers. The leaves are pinnate, and they, as well as the stem and branches, are thickly clothed with short glandular hairs. The flowers are very pretty, and from their rather long and slender footstalks, they have a peculiarly light and elegant appearance. This very graceful plant was discovered by Messrs. Ruiz and Pavon in the course of their botanical researches in Chili, and it was figured in their splendid work on the plants of that country. It was not, however, introduced till 1822, when seeds of it were first brought to England by Lady Cochrane, and the following year it flowered in several collections. Seeds of it are now common in all the seed-shops, and they may either be sown in autumn to stand the winter, like the Californian annuals (see p. 156) ; or sown in the open ground in February or March. At whatever season the seeds may be sown care should be taken to select a light rich soil and a sheltered situation for the young plants ; as this species is perhaps more

liable than any other annual to be broken by the wind, on account of the tenderness of its shoots. The collar of its stem should never be exposed to the sun, as when it is, it is liable to die off like the *Nemophila* (see p. 217). The culture of the variety is the same as that of the species; except that, from its dwarf stature and compact habit of growth, it will not require either tying up or being sheltered from the wind.

2.—SCHIZANTHUS PORRIGENS, *Graham*. THE SPREADING SCHIZANTHUS.

ENGRAVINGS.—Bot. Mag. t. 2521; Bot. Gard. No. 126; Swt. Brit. Flow. Gard. t. 76; and our *fig.* 2, in Plate 42.

VARIETY.—*S. por.* 2 Strachani.

SPECIFIC CHARACTER.—Fructiferous pedicels spreading, straightish. Tube of corolla shorter than the calyx; lateral segments of the lower lip longer than the middle one; upper segment oblong, obtuse.—(*G. Don.*)

DESCRIPTION, &c.—The principal apparent difference between this plant and *S. pinnatus*, consists in its spreading habit of growth, and in the flowers having a yellow star in the upper lip. It is a native of Chili, introduced in 1823. The variety, which was raised from seed of the species in the garden of J. A. Strachan, Esq., at Teddington Grove, is particularly light and elegant. The culture of both species and variety in the open air is the same as that of *S. pinnatus*; but they may be grown to great advantage in pots in the same way as directed for *Rhodanthe Manglesi* (see p. 199). The soil should be equal parts of peat, rotten dung, and sandy loam.

3.—SCHIZANTHUS RETUSUS, *Hook*. THE RETUSE-FLOWERED SCHIZANTHUS.

ENGRAVINGS.—Bot. Mag. t. 3045; Bot. Reg. t. 1544; Swt. Brit. Flow. Gard. 2nd Ser. t. 201; Bot. Gard. No. 521; Paxt. Mag. of Bot. vol. i. p. 5; and our *fig.* 4, in Plate 42.

SPECIFIC CHARACTER.—Fructiferous pedicels erect. Tube of corolla

longer than the calyx; lateral segments of the lower lip shorter than the middle one, which is sagittate; upper segment rhomboid-oblong, retuse.—(*G. Don.*)

DESCRIPTION, &c.—The most splendid of all the species. We have seen it in the open air in Henderson's Nursery, Pine Apple Place, Edgeware Road, between three and four feet high, and spreading in proportion. This species is, like the others, a native of Chili; and it was introduced in 1831. The seeds may either be sown in autumn to stand through the winter, or in February or March, in light soil not too rich (the best soil is one composed of equal parts of peat and sandy loam); and the plants should never be grown two seasons on the same ground. In pots they should be treated like the *Rhodanthe*.

OTHER SPECIES OF SCHIZANTHUS.

S. PRIESTII, Paxt. Mag. of Bot., vol. i. p. 31; and our *fig.* 5, in Plate 42.

A very beautiful plant, raised from seed supposed to be of *S. pinnatus* or *S. porrigens*, in 1833, by Mr. Priest, a nurseryman of Reading. The shape of the flower is that of *S. pinnatus*; but the habit of the plant resembles that of *S. porrigens*. The colour of the flower is white, stained with bright yellow.

S. HOOKERII, *Gillies*; Bot. Mag. t. 3070.

The corolla is of a pale rose colour, with a blotch of yellow on the upper segment. A native of Chili, introduced in 1828.

S. GRAHAMII, *Hook*; Bot. Mag. t. 3044.

Corolla lilac, except the upper lip, which is yellow, tipped with lilac. A native of Chili, introduced in 1831.

GENUS III.

SALPIGLOSSIS, *Ruiz et Pavon*. THE SALPIGLOSSIS.*Lin. Syst.* DIDYNAMIA ANGIOSPERMIA.

GENERIC CHARACTER.—Calyx 5-angled, 5-cleft. Corolla funnel-shaped, 5-lobed; lobes 2-lobed. Stamens didynamous, with the rudiment of a fifth between the two longer ones. Style tongue-shaped at the apex. Stigma truncate, transverse.—(*G. Don.*)

SALPIGLOSSIS SINUATA, *Ruiz et Pavon*. THE CUT-LEAVED SALPIGLOSSIS.

SYNONYME.—*S. atropurpurea*, *Graham*.

ENGRAVINGS.—*Bot. Mag.* t. 2811; *Bot. Reg.* 1518; *Swt. Brit. Flow. Gard.* t. 271; and our *fig.* 8, in Plate 42.

VARIETIES.—*S. s.* 2 *pieta*, *G. Don.*; *S. picta*, *Swt.*; *Brit. Flow. Gard.* t. 258; *S. straminea*, var. *pieta*, *Hook.*, *Bot. Mag.* t. 3365; and our *fig.* 7, in Plate 42. The painted *Salpiglossis*. Corolla variegated with yellow, blue, and purple. Raised by Dr. Neill from seeds received from Chili, in 1825.

S. s. 3 *straminea*, *G. Don.*; *S. straminea*, *Hook.*; *Swt. Brit. Flow. Gard.* t. 231; *Bot. Gard. No.* 333; and our *fig.* 9, in Plate 42. The straw-coloured *Salpiglossis*. Corolla straw-coloured, veined

with purple. Raised in the garden of Mrs. Marryat, at Wimbledon, from seeds received from Valparaiso, about 1824.

S. s. 4 *Barelayana*, *G. Don.*; *S. Barelayana*, *Cameron*; *Swt. Brit. Flow. Gard.* 2d Ser. t. 112; *S. intermedia*, *Swt.* A very beautiful plant, a hybrid between *S. picta* and *S. atropurpurea*; raised at Bury Hill, the seat of Charles Barelay, Esq., about 1830. The flowers are of a brilliant yellow, veined and edged with purple.

SPECIFIC CHARACTER.—Plant clothed with glandular hairs. Lower leaves petiolate, elliptic-oblong, sinuated. Upper ones sessile, lanceolate-linear, quite entire. Stem paniculately branched at top. Branches racemose, dichotomous. Filaments glandularly pilose.—(*G. Don.*)

DESCRIPTION, &c.—The genus *Salpiglossis* seems to have puzzled botanists where to place it, as well as in the arrangement of its species. It was first supposed to belong to *Bignoniaceæ*, from its trumpet-shaped corolla; it was then placed in *Solanaceæ*, from its apparent alliance to *Petunia*; the resemblance between the genera being in fact so great, that several species, now considered as *Petunias*, were first supposed to belong to *Salpiglossis*. Dr. Lindley, however, thinks that “its real affinity is with *Digitalis*,” (the foxglove,) and he has accordingly placed it in *Scrophularineæ*, considering it to form one of the connecting links between that order and *Solanaceæ*. Wherever it may be placed, there can be no doubt of its near alliance to *Schizanthus*, and accordingly it is always kept next to that genus, in botanical works.

All the kinds of *Salpiglossis* differ only in the colour of their flowers; and for this reason Mr. George Don, in his large work entitled *A General History of the Dichlamydeous Plants*, has made them all varieties of one species. The name of *Salpiglossis*, which signifies a tongue in a tube, is supposed to allude to the shape of the stigma, which is plainly seen in the centre of the tube-shaped corolla. The species is a native of Chili, and was introduced in 1824. All the kinds of *Salpiglossis* appear to agree in many respects with the *Schizanthus*; but the former are the most tender. Thus the seeds of *Salpiglossis* are generally sown on a hotbed in February, and the young plants kept in pots till May, when they may be planted in the open ground. The soil should be two thirds of loam, and one third of peat, without any manure. The *Salpiglossis* is apt to die suddenly, if the sun withers the collar of the stem, like the *Schizanthus*; and it is also apt to damp off, if the collar be exposed to stagnant moisture. When grown in pots, it may be treated like the *Rhodanthe*; and will flower splendidly. It varies very much according to the soil and situation in which it is grown. The varieties require the same treatment as the species. All the kinds may be kept through the winter in pots in a greenhouse; and they will all become partially woody like the mignonette. They will rarely, however, live longer than two or three years, and will seldom flower well more than once. Many gardeners sow the seeds in autumn, and keep the plants in frames during the winter, when they will flower early in spring.

GENUS IV.

ANTIRRHINUM, *Juss.* THE SNAPDRAGON.*Lin. Syst.* DIDYNAMIA ANGIOSPERMIA.

GENERIC CHARACTER.—Corolla personate, saccate, or gibbous at the base. Capsule opening by three valvate pores under the apex, rarely by two irregular holes.—(*G. Don.*)

ANTIRRHINUM GLANDULOSUM, *Lindl.* THE GLANDULAR SNAPDRAGON.SYNONYME.—? *A. rytidocarpum*, *Fisch. et Mey.*ENGRAVINGS.—Bot. Reg. t. 1893; and our *fig. 3*, in Plate 43.

SPECIFIC CHARACTER.—Sprinkled over on every side with glandular

hairs. Leaves alternate, ovate-lanceolate, narrowed with petioles.

Raceme of flowers dense and leafy. Lobes of calyx linear-lanceolate,

unequal.—(*Lindl.*)

DESCRIPTION, &c.—An upright-growing plant about two feet high, with a very dense, leafy raceme of pink flowers, and covered all over with glandular, and somewhat viscid, hairs. The leaves are rather succulent, and they are long and lanceolate, narrowing into a petiole at the base. The plant itself is curious as being the only snapdragon as yet found truly wild in the New World. The species is a native of California, where it was found by Douglas, and seeds of it sent home in 1825. It is supposed to be the same as *A. rytidocarpum*, a native of Caucasus, the seeds of which were sent to England from St. Petersburg in 1835; but as the flowers of *A. rytidocarpum* are stated to be blue, while those of *A. glandulosum* are pink, the Russian kind appears more likely to be a variety than exactly the same species. The culture is the same as that of the other Californian plants, all of which are more injured by heat than cold.

OTHER ANNUAL SPECIES OF ANTIRRHINUM.

A. ORONTIUM, *Lin.*; Eng. Bot. t. 1155, 2d. edit. vol. 5, t. 875.

This is a British weed commonly called Calves Snout, from a fancied resemblance between the seed-pod and the head of an animal. The word *Antirrhinum* has nearly the same meaning, being compounded of *Anti* like, and *Rhin* a snout.

A. CALYGINUM, *Lour.*

A Portuguese plant with whitish flowers curiously marked with purple or rose-coloured veins. Introduced in 1810.

A. INDICUM, *Royle.*

Flowers reddish; bracteas and floral leaves very long. A native of India, in the province of Delhi.

GENUS V.

LINARIA, *Vent.* TOAD-FLAX.*Lin. Syst.* DIDYNAMIA ANGIOSPERMIA.

GENERIC CHARACTER.—Corolla personate, spurred at the base. Capsule opening by two lids at the top, or by 4—10 tooth-formed, or valve-formed parts.—(*G. Don.*)

DESCRIPTION, &c.—Many of the species now considered as belonging to this genus were formerly included in the genus *Antirrhinum*. The genera, indeed, only differ very slightly; in *Antirrhinum* the corolla is gibbous at

the base, and in *Linaria* it is spurred; there is likewise a little difference in the capsules. The peculiarities of the two genera will be easily discovered by comparing the common toad-flax, *Linaria vulgaris*, with the common snapdragon, *Antirrhinum majus*. All the *Linarias* are tall-growing plants with showy flowers, and all of the easiest culture in any common soil. The principal care they require is to thin them out, to prevent them from becoming drawn up, and weak; as few plants look more straggling and untidy when this precaution is not attended to. Where time is not an object, a few plants of *Linaria* may be grown so as to produce a splendid effect by raising them in pots, and frequently shifting them, as directed for *Rhodanthe*, till they are ready to go into flower, when they should be turned out of the pot, without breaking the ball of earth, into the open ground; thus treated, the plants will present so different an appearance as scarcely to be recognised, and their flowers will be splendid.

1.—LINARIA TRIPHYLLA, Mill. THE THREE-LEAVED TOAD-FLAX.

SYNONYMES.—*L. glabrata*, *H. B. and Kth.*; *L. neglecta*, *Clarke and Guss.*; *Antirrhinum tricolor*, *Hort.*; *A. triphyllum*, *Lin.*

ENGRAVINGS.—*Bot. Mag.* t. 324; and our *fig. 4*, in Plate 43.

VARIETIES.—*L. t. 2* *cœrulea*, *Chav.*, has the corollas nearly all blue; the leaves narrower, and the plant more slender. *L. t. 3*

peloria, *Ræm.*, has the corollas shaped like those of the *Peloria*, or deformed variety of the common toad-flax.

SPECIFIC CHARACTER.—Quite glabrous, glaucous, erect or ascending. Leaves ovate and elliptic, usually 3 in a whorl. Flowers disposed in dense, spicate racemes. Calycine segments oblong, or ovate-lanceolate; obtuse, shorter than the capsule.—(*G. Don.*)

DESCRIPTION, &c.—This species of Toad-flax is easily distinguished from all the others by the peculiar disposition of its leaves, which grow three together, just at the base of the flower-stalk; whence it has received the specific name of *triphyllum*, literally three-leaved. The colour of the flower is a less certain mark of distinction; as though it is generally three-coloured, that is, purple, white, and yellow, it sometimes varies to all purple, and sometimes to all yellow. It is a native of Sicily and Spain; and it was introduced from the latter country before 1629, as Parkinson mentions it in that year, calling it the “Tode Flaxe of Valentia.” It is quite hardy, and requires no other care than sowing in March or April. When the plants come up, they should be thinned out, as if suffered to remain many together they become drawn up and weak; whereas, if they are allowed room, several flower-stalks will spring from one root. The flowers should be cut off as soon as they fade, as, if the seed be suffered to ripen, the capsules will burst and scatter it; and self-sown plants will spring up in such abundance, that it will be found very difficult to eradicate them. The seeds are generally sold in the seed-shops, under the name of *Antirrhinum triphylla*.

2.—LINARIA SPARTEA, Rechb. THE BRANCHING TOAD-FLAX.

SYNONYMES.—*L. juncea*, *Desf.*; *L. præcox*, *Hoffm. et Link.*; *Antirrhinum junceum*, *Lam.*; *A. sparteum*, *Lin.*

ENGRAVINGS.—*Bot. Mag.* t. 200; and our *fig. 2*, in Plate 43.

SPECIFIC CHARACTER.—Plant erect, branched. Leaves linear-lanceo-

late, erect, quite glabrous; lower ones often three in a whorl; superior one alternate; those of the stem flat, 3—4 in a whorl. Flowers on long pedicels. Calycine fragments linear, or linear-lanceolate, acute, glabrous or downy.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of this species are of the most brilliant golden yellow, and where the plants are allowed plenty of room to spread, they make a beautiful bed in a regular flower-garden. The species is a native of the shores of the Mediterranean, and the Canary Islands; and it was introduced in 1772. The seeds may be purchased in any seed-shop, generally under the name of *Antirrhinum sparteum*, and they only require sowing in February or March in the open border. When the plants come up they should be thinned out, and if the weather be dry, they should be frequently watered. Thus treated, they will become short, thick, branching plants, and be covered with a profusion of flowers.

3.—*LINARIA SPECIOSA*, Jacq. THE SHOWY TOAD-FLAX.

SYNONYMES.—*L. bipartita*, Willd.; *L. cœrulea*, Hort.; *Antirrhinum orchidiflorum*, Hort.; *A. bipartitum*, Vent.; *A. speciosum*, Don.

ENGRAVINGS.—Swt. Brit. Flow. Gard. t. 30; and our fig. 2, in Plate 43.

SPECIFIC CHARACTER.—Glabrous. Leaves linear, or linear-lanceolate, flat, alternate or verticillate; those of the sureuli broader, and three in a whorl. Flowers disposed in loose racemes. Segments of the calyx almost lanceolate, acute, with membranous edges.—(*G. Don.*)

DESCRIPTION, &c.—This plant has very beautiful flowers when closely examined, though they are not so showy in a mass as those of *L. spartea*. The stem is slender and branching, and seldom, under any circumstances, rises more than a foot high. The plant is a native of Morocco, and was introduced in 1815. The seeds are common in every seed-shop under the name of *Antirrhinum speciosum*, and they require no other care than sowing, not too thick, in rather poor and sandy soil.

4.—*LINARIA CANADENSE*, Dum. THE CANADIAN, OR AMERICAN TOAD-FLAX.

SYNONYMES.—*Antirrhinum Canadense*, Lin.; *A. pauciflorum*, Pæpp.

ENGRAVINGS.—Bot. Mag. t. 3473; and our fig. 6, in Plate 43.

SPECIFIC CHARACTER.—Leaves linear, remote, glabrous, usually alternate; those of the sureuli broader, opposite, or three in a whorl. Raceme loose, slender, attenuated upwards. Pedicels longer than the bracteas. Calycine segments acute, downy.—(*G. Don.*)

DESCRIPTION, &c.—This elegant little plant is not half so much cultivated as it deserves to be, from its large, delicate, pale-violet flowers, and elegant, though slender habit of growth. The plant, though called Canadian, is a native of both North and South America; and though known to and described by Linnæus, it was not, as Sir W. J. Hooker informs us, introduced into our gardens till the spring of 1835; when Mr. Drummond sent seeds (as well as specimens) from Texas, which produced flowers the ensuing summer. The seeds differ from the other species in being brown instead of black, and much furrowed; they are not yet common in the seed-shops, but when procured, they should be sown in a sandy loam in March or April. The plant is quite hardy, and well deserving of cultivation. It is the only species of *Linaria* that has been discovered in America. The seeds are sold at Charlwood's and in other seed-shops, under the proper name of the plant, *Linaria Canadense*.

5.—*LINARIA TRISTIS*, Mill. THE SAD-COLOURED TOAD-FLAX.

SYNONYME.—*Antirrhinum triste*, Lin.

ENGRAVINGS.—Bot. Mag. t. 74; and our fig. 1, in Plate 43.

SPECIFIC CHARACTER.—Glaucous, downy at top; leaves linear, or linear-oblong; lower ones 3 or 4 in a whorl, upper ones opposite,

or alternate; flowers approximate, sometimes nearly opposite; bracteas deflexed; calycine segments linear-subspathulate, obtuse, downy.—(*G. Don.*)

DESCRIPTION, &c.—The colour of the flowers of this species is a fine rich purplish brown, so that they do not deserve the epithet applied to them in the specific name, as they only look dark or sombre at a distance; and when examined closely, it will be found to be curiously and beautifully marked. It is a native of the neighbourhood of Gibraltar, whence it was introduced in 1722. It is generally treated as a greenhouse perennial, as it is too tender to live through the winter in the open air; but it will do quite well in the open border if treated as an annual.

OTHER SPECIES OF *LINARIA*.

The following are mentioned in Charlwood's Catalogue as kinds of which seeds may be procured. The shape of the flowers and the culture of the plants are the same in all.

L. LATIFOLIA, *Desf.*; A. LATIFOLIUM, *Willd.*

A native of Barbary, with large yellow flowers; introduced in 1800. A handsome plant, frequently growing as a large bush, two feet high. The seeds are sold under the name of *Antirrhinum*.

L. REFLEXA, *Desf.*; A. REFLEXUM, *Lin.*

A beautiful species with delicate pale blue or white and yellow flowers. A native of the south of Europe, introduced in 1810. The plant is procumbent and well adapted for rock-work. Seeds may be had at *Charlwood's* under the name of *Linaria*.

L. VERSICOLOR, *Mæsch.*; A. VERSICOLOR, *Lin.*

A native of the south of France, introduced in 1777. The plant is of low growth, and the flowers are of a pale yellow and a rich brown. This and all the following kinds are called *Antirrhinums* in the seed-shops.

L. VISCOSA, *Dum.*; A. VISCOSUM, *Lin.*

The flowers are brown, the stem rather low, and covered with a clammy down, and the root yellowish, spreading and twisted. The species is a native of Spain, and it was introduced in 1786.

L. BIPUNCTATA, *Dum.*; A. BIPUNCTATUM, *Lin.*

The flower is yellow marked on the palate with two very dark purple spots. A native of Spain, introduced in 1749.

GENUS VI.

NEMESIA, *Vent.* THE NEMESIA.*Lin. Syst.* DIDYNAMIA ANGIOSPERMIA.

GENERIC CHARACTER.—Corolla personate, spurred at the base. Capsule compressed, truncate at apex.—(*G. Don.*)

1.—NEMESIA FLORIBUNDA, *Lehm.* THE MANY-FLOWERED NEMESIA.

SYNONYME.—*N. affinis*, *Benth.*

ENGRAVINGS.—Bot. Reg. for 1838, t. 39; and our *fig. 7*, in Plate 43.

SPECIFIC CHARACTER.—Erect, subglabrous. Lower leaves petiolated,

ovate; upper ones subsessile ovate, oblong, or lanceolate, all frequently toothed in the margin. Racemes terminal, very loose. Capsules ovate, or oblong; nearly straight.

DESCRIPTION, &c.—A very pretty little low-growing, widely-spreading plant, covered with abundance of white flowers slightly stained with yellow and blue. A native of the Cape of Good Hope, introduced in 1837, and requiring the same culture as the *Linarias*. We do not know where to procure seed.

2.—NEMESIA BICORNE, *Pers.* THE TWO-HORNED NEMESIA.

SYNONYME.—*Antirrhinum bicornis*, *Lin.*

SPECIFIC CHARACTER.—Leaves opposite, ovate-oblong, serrated, stem erect. Flowers racemose. Capsule 2-horned, subdivaricate.—(*G. Don.*)

DESCRIPTION, &c.—This species is generally grown in a greenhouse; but it will grow quite well in the open air. It somewhat resembles *N. floribunda*, but it grows higher, and is remarkable for its two-horned capsule. It is a native of the Cape of Good Hope, and was introduced in 1774.

GENUS VII.

MAZUS, *Lour.* THE MAZUS.*Lin. Syst.* DIDYNAMIA ANGIOSPERMIA.GENERIC CHARACTER.—Calyx campanulate; teeth spreading. Lower lip of corolla papillosely gibbous at the base.—(*G. Don.*)MAZUS RUGOSUS, *Lour.* THE WRINKLED OR CHINESE MAZUS.SYNONYMES.—*M. bicolor*, *Benth.*; *Hornemannia bicolor*, *Willd.*; *Gratiola goodeniæfolia*, *Horn.*; *Lindernia Japonica*, *Thun.*ENGRAVINGS.—Swt. Brit. Flow. Gard. t. 36; and our *fig. 6*, in Plate 39.SPECIFIC CHARACTER.—Hardly stoloniferous; leaves all oblong, cuneated, coarsely toothed; segments of the calyx ovate-lanceolate, or lanceolate, acute, equal in length to the tube; corollas hardly twice the length of the calyx.—(*G. Don.*)

DESCRIPTION, &c.—A little creeping plant very suitable for rock-work; a native of Nepaul, introduced in 1780. Though a native of India, it is quite hardy, and requires no other care than scattering the seeds on rock-work, or in any dry sandy soil. The flowers are produced in great abundance, growing in little round tufts only an inch or two from the ground. The seeds should not be sown in the open ground till the latter end of April or even May, but they may be sown on a slight hotbed in February or March.

GENUS VIII.

TORENIA, *Lin.* THE TORENIA.*Lin. Syst.* DIDYNAMIA ANGIOSPERMIA.GENERIC CHARACTER.—Calyx plicate, obliquely 5-toothed. Two lower filaments appendiculate, or gibbous at the base.—(*G. Don.*)TORENIA CORDIFOLIA, *Roxb.* THE CORDATE-LEAVED TORENIA.ENGRAVINGS.—Bot. Mag. t. 3714; and our *fig. 6*, in Plate 44.

SPECIFIC CHARACTER.—Leaves ovate-cordate. Peduncles axillary,

sub-fascicled, or solitary. Corollas about twice the length of the calyx, which is ovate and rounded at the base.—(*G. Don.*)

DESCRIPTION, &c.—A little plant, with pale bluish purple flowers, and almost prostrate stem. A native of moist pastures in India, where it flowers during the cold season. It was introduced in 1837, but seeds of it are not yet common. It flowered in the stove at Glasgow; but will succeed quite well if raised on a slight hotbed, and transplanted in May to a moist, shady, and sheltered situation.

GENUS IX.

MIMULUS, *Lin.* THE MONKEY-FLOWER.*Lin. Syst.* DIDYNAMIA ANGIOSPERMIA.GENERIC CHARACTER.—Calyx 5-toothed. Corolla personate. Capsule 2-valved, with flattish margins.—(*G. Don.*)1.—MIMULUS FLORIBUNDUS, *Dougl.* THE ABUNDANT-FLOWERED MONKEY-FLOWER.ENGRAVINGS.—Bot. Reg. t. 1125; and our *fig. 4*, in Plate 44.

SPECIFIC CHARACTER.—Diffuse, loosely pilose, clammy. Leaves petiolate, broad-ovate, a little toothed, truncate at the base, or rounded.

Calyx small, ovate-tubular, almost equally truncate, with very short, acute teeth.—(*G. Don.*)

DESCRIPTION, &c.—A pretty little plant, greatly resembling the musk-plant in its flowers, but growing more erect. The plant is a native of California, where it was discovered by Douglas on moist rocks near the Columbia.



1. *Brewallia grandiflora*. — 2. *Brewallia ciliata*. — 3. *Brewallia densa*.
 4. *Moraea floribunda*. — 5. *Crotalaria occulta*. — 6. *Crotalaria cuneifolia*.
 7. *Alonsoa linearis*.

It is quite hardy, and grows readily in a warm dark situation and peat earth. The seeds should be sown very thinly; but from their small size it is very difficult to do this without mixing them with sand, or wood-ashes before they are sown. When the young plants come up, they should be thinned out. The flowers are produced in great abundance; but they are generally of very short duration, and usually close about mid-day. The calyx, however, becomes inflated, and ribbed with red, when the seeds are swelling; so that it is rather ornamental after the flowers have dropped. We do not know where seeds are to be procured.

OTHER SPECIES OF MIMULUS.

M. PARVIFLORUS, *Lindl.*, Bot. Reg. t. 874.

A procumbent plant, rooting at the joints, and somewhat resembling *M. moschatus*, the common musk-plant, but with smaller flowers, and larger leaves. A native of Chili, introduced in 1824, but now lost to our gardens. Douglas discovered several other species of *Mimulus* in California, which appeared to him annual, but none of them have as yet been introduced. All the kinds require a moist shady situation, and peat earth.

GENUS X.

ALONSOA, *Ruiz et Pavon*. THE ALONSOA, OR MASK-FLOWER.

Lin. Syst. DIDYNAMIA ANGIOSPERMIA.

GENERIC CHARACTER.—Corolla subrotate, resupinate from the twisting of the pedicels.

1.—ALONSOA LINEARIS, *Ruiz et Pavon*. THE LINEAR-LEAVED ALONSOA, OR MASK-FLOWER.

SYNONYMS.—*Celsia linearis*, *Jacq.*; *Hemimeris coccinea*, *Willd.*; *H. linariaefolia*, *H. B. et Kunth*; *Hemitomus fruticosus*, *L'Herit.*

DERIVATION.—The genus is named in honour of Don Zanoni Alonso, a Spanish consul in South America.

ENGRAVINGS.—Bot. Mag. t. 210; Swt. Brit. Flow. Gard. 2nd Ser., t. 240; ? Bot. Cab. t. 1456; and our fig. 7, in Plate 44.

SPECIFIC CHARACTER.—Glabrous; leaves opposite, or three in a whorl, linear, entire, or remotely denticulated.—(*G. Don.*)

DESCRIPTION, &c.—Nothing can exceed the brilliant colours of the flowers of this little plant, which, though generally considered a greenhouse shrub, is found to succeed quite well when grown as an annual in the open air. It is a native of Peru, whence it was introduced in 1790, and was at first called *Celsia linearis*, by which name it is still generally known in the nurseries and seed-shops. It was first treated as a hothouse shrub; it was then removed to the greenhouse, and afterwards, being found to ripen abundance of seeds, it was grown as a tender annual; but it is now found to succeed even if sown in the open ground. To secure a fine show of flowers, it is, however, generally thought best to raise the seeds on a slight hotbed, and to plant them out in May, and thus treated, the plants will produce a succession of brilliant flowers throughout the whole summer. *A. intermedia*, Lodd. Bot. Cab. t. 1456, is a hybrid between this and the following species, *A. incisifolia*.

2.—ALONSOA INCISIFOLIA, *Ruiz et Pavon*. THE CUT-LEAVED ALONSOA, OR MASK-FLOWER.

SYNONYMS.—*Celsia urticifolia*, *Curt.*; *Hemimeris urticifolia*, *Willd.*; *Alonsoa grandiflora*, *Hort.*

ENGRAVING.—Bot. Mag. t. 417.

SPECIFIC CHARACTER.—Glabrous; leaves opposite, ovate, acute, deeply toothed, or serrated.—(*G. Don.*)

DESCRIPTION, &c.—Larger and stronger-growing than *A. linearis*, but with rather darker and less splendid flowers. It is a native of Chili, introduced in 1795, and requires the same treatment as the preceding species, but is hardier. Both kinds require a loamy soil and an open situation. Seeds may be purchased in the seed-shops under the name of *Alonsoa grandiflora*.

GENUS XI.

CASTILLEJA, *Lin.* THE CASTILLEJA, OR PAINTED CUP.*Lin. Syst.* DIDYNAMIA ANGIOSPERMIA.

GENERIC CHARACTER.—Calyx compressed, bifid or quadrifid, cleft on one side. Upper lip of corolla linear, channelled, entire. Cells of anthers unequal.—(*G. Don.*)

CASTILLEJA COCCINEA, *Spreng.* THE SCARLET-PAINTED CUP.SYNONYMS.—*Bartsia coccinea*, *Lin.*; *Euchroma coccinea*, *Nutt.*ENGRAVINGS.—*Bot. Reg.* t. 1136; and our *fig. 5*, in Plate 44.

SPECIFIC CHARACTER.—Leaves, as well as the coloured bractes,

divaricately trifid. Calyx bifid, nearly equal with the corolla. Segments retuse and emarginate.—(*G. Don.*)

DESCRIPTION, &c.—This very singular plant was discovered in several parts of North America almost at the same time by different botanists, and was introduced as early as 1787; but it was soon lost, and was not restored to British gardens till 1826, when seeds were sent home to the Horticultural Society's gardens by Douglas.

When first discovered, it was supposed to belong to the genus *Bartsia*, the Marsh-eyebright, and it was there placed by Linnæus, who, though he established the genus *Castilleja* in honour of D. Castillejo, a botanist of Cadiz, did not consider this species to belong to it. In America, *Castilleja coccinea* is called the painted cup; a name it well deserves from its bright yellow flowers and bright scarlet bractes. The species is scarce, and easily lost, as it ripens few seeds in England; but it is so abundant in almost every part of the United States, that seed is always easily to be procured from that country. "The plants," Dr. Lindley observes in the *Bot. Reg.*, "should be grown in gravel, or peat and sand, and not in loamy soil." They are quite hardy, and require no other care than sowing very early in spring (say February or March), or in autumn, to stand the winter, like the other Californian annuals.

GENUS XII.

BROWALLIA, *Lin.* THE BROWALLIA.*Lin. Syst.* DIDYNAMIA ANGIOSPERMIA.

GENERIC CHARACTER.—Calyx 5-toothed. Corolla salver-shaped, resupinate. Stigma 2-lobed, 4-tubercled. Capsule 2-celled. Dissepiment contrary; placentas fleshy.—(*G. Don.*)

DESCRIPTION, &c.—The plants belonging to this genus are all half-hardy annuals, natives of South America, generally kept in greenhouses, but which, if reared in a slight hotbed, will grow well in a sheltered situation in the open air. The genus was named by Linnæus, in honour of his friend Browallius, the bishop of Aboa, who wrote in defence of Linnæus' system, against some of the numerous enemies which the newness of the doctrines broached in it raised up against its author. Before the time of Linnæus, botanists had no means of distinguishing plants, but by long Latin descriptions, which were so tiresome and so inconvenient, that we now wonder how botanists could submit to be annoyed with them. They had, however, many partisans, and when Linnæus first proposed his simplifying system, the innovation was vehemently opposed. It is not surprising that Linnæus wished to show his gratitude to a friend who had had courage to support him when so many persons were opposed to him; but it is lamentable to find that in the end the friends quarrelled, and that Linnæus is said to have named the different species to commemorate this friendship and this quarrel. Thus, *B. elata* is said to express the extent of their friendship; *B. demissa*, its decrease; and *B. alienata*, their final quarrel. The first two names are, however, so well accounted for by the habits of the respective plants, that this origin for them appears too anciful.

1.—BROWALLIA DEMISSA, *Lin.* THE DWARF, OR SPREADING BROWALLIA.ENGRAVINGS.—Bot. Mag. t. 1136 ; and our *fig.* 3, in Plate 44.

SPECIFIC CHARACTER.—Leaves ovate-oblong, acuminate, oblique at

the base. Peduncles axillary, 1-flowered, and are, as well as the branches, downy. Calyx glabrous.—(*G. Don.*)

DESCRIPTION, &c.—The leaves of this plant are hairy, and the flowers vary from a bright but pale blue to purple or red, and sometimes there are flowers of all the three colours on the same plant at once. The species is a native of South America, where it is called Botanera. It is a low-growing plant, seldom rising above six inches high. It was introduced in 1735, under the name of Dalea, as it was supposed to belong to that genus, and was first cultivated by Philip Miller, the author of the well-known Gardener's Dictionary, when he was curator of the Botanic Garden at Chelsea. Seeds are common in the seed-shops, and they should be sown in a hotbed, then transplanted into pots, and not planted out till June.

2.—BROWALLIA ELATA, *Lin.* THE TALL BROWALLIA.ENGRAVINGS.—Bot. Mag. t. 34 ; and our *fig.* 2, in Plate 44.VARIETY.—*B. e.* 2 alba, *Hort.* ; has the flowers white.SPECIFIC CHARACTER.—Leaves oval, acuminate. Peduncles axillary, one or many-flowered.—(*G. Don.*)

DESCRIPTION, &c.—A tall, upright-growing plant, with corymbs of dark blue flowers ; the stem is strong and much branched, and the whole plant, when allowed room to grow, is very handsome. It is a native of Peru, and was introduced in 1768. Seeds are common in the seed-shops ; and they should be sown on a hotbed, like those of *B. demissa*. The plants are generally grown in pots for placing under a veranda or in a greenhouse ; but they are quite hardy enough for planting out in the open air in May or June, and they are very ornamental.

3.—BROWALLIA ELONGATA, *H. B. et Kunth.* THE ELONGATED BROWALLIA.SYNONYME.—*B. lactea*, *Hort.*

SPECIFIC CHARACTER.—Leaves ovate, acuminate, rounded at the

base. Peduncles 1-flowered, axillary. Branchlets, peduncles, and calyxes, clothed with hairy pubescence.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of this species are blue, spotted with a peculiarly dead white, which looks as though a few drops of milk had been sprinkled on the flower. The stem and branches rather angular and downy ; and the leaves are hairy. The plant is as tall as *B. elata*, but with a weaker stem.

4.—BROWALLIA GRANDIFLORA, *Graham.* THE LARGE-FLOWERED BROWALLIA.ENGRAVINGS.—Bot. Mag. t. 3069 ; and our *fig.* 1, in Plate 44.

SPECIFIC CHARACTER.—Leaves ovate, acute, attenuated into the petioles at the base. Peduncles 1-flowered, axillary, racemose at

the tops of the branches. Branches and adult calyxes glabrous.—(*G. Don.*)

DESCRIPTION, &c.—This species is one of the tallest of the genus, as it generally grows two feet high, and branches in proportion ; the flowers are also very large, though they are not so handsome as most of the other kinds, on account of their pale colour. The species is a native of Peru, but it is rather hardier than the others, and will thrive well even if sown in the open border. Seeds are to be procured at Charlwood's and other seed-shops.

5.—BROWALLIA CORDATA, *G. Don.* THE CORDATE-LEAVED BROWALLIA.SYNONYME.—*B. grandiflora*, *Lindl.*ENGRAVING.—*Bot. Reg.* t. 1384.

SPECIFIC CHARACTER.—Leaves cordate-ovate, acuminate. Pedun-

cles 1-flowered, racemose at the tops of the branches. Branches and adult calyxes glabrous.—(*G. Don.*)

DESCRIPTION, &c.—This is the plant figured under the name of *B. grandiflora* in the Botanical Register, but it differs considerably from the plant to which the same name is given in the Botanical Magazine. The flowers are much smaller, they are of a deeper blue, or of pure white, with a dark yellow eye, and the under side of the petals is yellow; the leaves are cordate, and of a dull green; and the whole plant is smaller. It is a native of Peru, and was introduced in 1829. The culture is the same as that of the other species.

CHAPTER XLI.

SOLANACEÆ.

ESSENTIAL CHARACTER.—Calyx usually 5-cleft, persistent. Corolla usually 5-cleft, monopetalous, usually regular. Stamens usually 5, epipetalous. Style one. Fruit capsular or baccate, 2 to 4-celled. Albumen fleshy. Herbs or shrubs with a peculiarly nauseous smell. Leaves alternate. Inflorescence variable, but generally extra-axillary. —(*G. Don.*)

DESCRIPTION, &c.—The order Solanaceæ is a very interesting one, as it contains not only many useful plants, such as the common potato, the capsicum, and the tomato, but some of our most splendid flowers, such as the *Daturas* and *Brugmansias*, the *Petunias*, and the different kinds of Tobacco. Many botanists include the genera *Salpiglossis*, *Schizanthus*, and *Browallia*, in the Solanaceæ; but others place them, as we have done, in the *Scrophularinæ*. Several of the plants belonging to Solanaceæ are narcotic poisons; as, for example, the deadly-nightshade, the henbane, and the thorn-apple. All the species require a rich free soil, and they are all robust and vigorous-growing, taking up a great deal of room, and being therefore quite unfit for small gardens.

GENUS I.

NICOTIANA, *Tourn.* THE TOBACCO.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx tubular. Corolla funnel-shaped, or salver-shaped; limb equal. Stamens rather unequal, inclosed or exserted. Capsule dehiscent by 4 parts at the apex; placentas free.—(*G. Don.*)

DESCRIPTION, &c.—The different kinds of Tobacco have all ornamental tube-shaped flowers, and very large thick leaves, which are used for making tobacco and snuff. They are cultivated for these purposes abroad, and sometimes even in England; though in this country they are generally grown for their flowers, and, in fact, no person is here permitted to grow more than half an acre of tobacco without purchasing a licence from the Excise. The different kinds of Tobacco are by no means common in gardens, partly on account of the room they take up from their thick and branching stems and the large size of their leaves, and partly on account of their rapidly exhausting the soil. The name of *Nicotiana* was given to the genus by Tournefort, in honour of M. Nicot, the French ambassador to Portugal, who introduced the first species of it into France; and that of Tobacco, from the name given by the native Indians to the pipe they used in smoking. The principal species grown for their leaves are, *N. tabacum*, the Virginian tobacco; *N. macrophylla*, the Oroonoko tobacco; and *N. rustica*, the common tobacco.



1. *Nicotiana tabacum*. 2. *Nicotiana acuminata*. 3. *Nicotiana noctiflora*. 4. *Nicotiana glauca*.
 5. *Nicotiana longiflora*. 6. *Nicotiana glauca*. 7. *Nicotiana peruviana*. 8. *Nicotiana Langelorpii*.

Drawn by H. B. K. & J. A. W. in the green.

1.—NICOTIANA TABACUM, *Lin.* THE VIRGINIAN TOBACCO.SYNONYMES.—*N. Havanaensis*, *Log.* ; *N. Virginiana*, *Hort.*ENGRAVINGS.—Wood Med. Bot. t. 69 ; Stev. et Church. Med. Bot. 1, t. 37 ; Bot. Gard. No. 160 ; and our *fig.* 1, in Plate 45.SPECIFIC CHARACTER.—Leaves sessile, oblong-lanceolate, acuminate ; lower ones decurrent ; throat of the corolla inflately ventricose ; segments of the limb acuminate.—(*G. Don.*)

DESCRIPTION, &c.—A very vigorous plant, growing from four to six feet high, with very large leaves and pink flowers, which appear rather small in proportion to the size of the plant. This species was the first discovered, and, according to Linnæus, it was brought by the Spaniards to Europe in 1560. About the same period it appears to have been cultivated by the first English settlers in Virginia, who had observed the use made of the leaves by the Indians (who imagined that smoking would cure several diseases), and wished to imitate their example. About 1607, tobacco was in such request in Virginia that it passed generally in lieu of money ; and a man who had a roll of tobacco in his pocket, could purchase a dinner or procure a bed, as well as one who had a purse of money. Tobacco was brought to England, in the reign of Elizabeth, by Sir Walter Raleigh. The story of Sir Walter at first keeping the use of the plant a secret, and of its being discovered by a servant, who when he saw smoke coming out of his master's mouth thought he was on fire and threw water in his face, is well known, as is the work written by James I. against smoking. James, however, was not the only sovereign opposed to tobacco, as the Emperor of the Turks, the Grand Duke of Moscow, the King of Persia, and Pope Urban VIII. all issued similar prohibitions ; and in 1689, an edict was issued in Transylvania, threatening those who should plant tobacco with the confiscation of their estates. At present, tobacco is cultivated to a great extent, chiefly in the West Indies and the Southern states of North America. When grown as an article of commerce, the plants are raised in beds, and then planted out in the fields three feet apart ; and when they send up a flower-stalk, its top is nipped off, to strengthen the leaves. When the leaves become brittle, they are cut with a knife close to the ground ; they are then carried to the drying-shed, where they are hung up in pairs to dry. They are afterwards laid in heaps, and covered with blankets, to heat them, and on the nicety of this operation the goodness of the tobacco depends ; as if the leaves are overheated, they are spoiled,—and if not sufficiently, they are deficient in the intoxicating properties for which the tobacco is chiefly valued. When no more heat is perceivable in the heaps, the leaves are packed in casks for exportation. The manufacture of the tobacco into snuff, &c., generally takes place in England, though some cigars are made in Cuba and other places. The leaves are first carefully cleansed from any earth or other impurities that may have become attached to them, and all their decayed parts are picked out ; they are then moistened with salt and water, or a decoction of liquorice and salt, &c., and the midrib of each leaf is cut out. The most perfect leaves are then rolled up to form cigars, a reed or iron pin being kept in the centre of the cigar, and the leaves rolled round it by a kind of machine. Some of the remainder of the tobacco is then spun into cords, or twisted into rolls for chewing ; and another part is cut into shreds by an instrument like a straw-cutting machine, for smoking in pipes. Snuff is made by drying the leaves, and grinding them in a mill ; and there are many different kinds, differing in their fineness and in the scents mixed with them. What is called shag tobacco, is made by drying the leaves on copper. The coarser leaves are used for making tobacco-water, or for fumigation, to destroy insects.

There are many varieties of the Virginian tobacco, but the species is the kind usually grown in British gardens, where, though its leaves are sometimes gathered and dried for use, it is principally cultivated as a handsome border flower. It requires a light but rich soil. The seeds should be raised on a slight hotbed, or in

a warm border ; and the plants, when removed to the beds where they are to flower, should be planted about three feet apart every way. While the plants are young, the joints of the leaves should be frequently examined, lest they should be attacked by a caterpillar, which often destroys the young opening leaves, and consequently the beauty of the plant.

2.—NICOTIANA MACROPHYLLA, Spreng. THE LARGE-LEAVED, OR OROONOKO TOBACCO.

SYNONYMS.—*N. latissima*, Mill. ; *N. gigantea*, Hort. ; *N. tabacum*, var. *macrophyllum*. at the base ; throat of corolla inflately ventricose ; segments of the limb short, acuminate.—(*G. Don.*)

SPECIFIC CHARACTER.—Leaves stem-clasping, ovate, acute, auricled

DESCRIPTION, &c.—This is the largest species of tobacco, as it frequently grows seven or eight feet high, with enormous leaves and pink flowers. The whole plant bears a great resemblance to the common Virginian tobacco, except that it is larger in all its parts. This is much grown in Cuba, and its leaves are used for making the larger and coarser kinds of Havannah cigars. In England it is generally confounded with *N. tabacum*, and the year of its introduction is uncertain.

3.—NICOTIANA RUSTICA, Lin. THE ROBUST, OR COMMON ENGLISH TOBACCO.

VARIETIES.—These are very numerous ; but the kind best known is *N. r.* 2, Asiatica, Schultes ; syn. *N. Sibirica*, Hort. ; *N. Tatarica*, Hort. ; *N. scabra*, Cav. ; *N. rugosa*, Mill.

SPECIFIC CHARACTER.—Stem terete ; leaves petiolate, quite entire ; tube of corolla cylindrical, longer than the calyx ; segments of the leaf roundish, obtuse.—(*G. Don.*)

DESCRIPTION, &c.—This is the hardiest of all the kinds ; and, indeed, when once sown, it is so difficult to eradicate, that it may be almost considered a weed. It was one of the first species introduced, having been brought to England in 1570 ; and it is the plant known among the Indians by the name of Petun. It is a plant of no beauty, the flowers being of a dirty greenish-yellow, and the whole plant being covered with clammy hairs, extremely disagreeable to the touch. It is, however, very generally grown in large kitchen-gardens for the leaves, which, from their strong, rank odour, are considered very efficacious for fumigating insects, &c. Seeds are common in all the seed-shops, and they only require to be sown in the open border.

4.—NICOTIANA LANGSDORFII, Wein. LANGSDORFF'S TOBACCO.

ENGRAVINGS.—Bot. Mag. t. 2221, and t. 2555 ; and our fig. 8, in Plate 45.

SPECIFIC CHARACTER.—Stem branched ; lower leaves ovate, obtuse,

petiolate ; superior ones almost sessile, decurrent ; tube of corolla clavate ; segments of the limb obtuse.—(*G. Don.*)

DESCRIPTION, &c.—A very handsome plant, growing about three feet high, with clear yellowish-green flowers. This species is a native of Brazil, from which country it was sent to Europe by M. Langsdorff, the Russian consul at Rio de Janeiro. It was introduced into England in 1819, but it is by no means common in collections.

5.—NICOTIANA LONGIFLORA, Cav. THE LONG-FLOWERED TOBACCO.

ENGRAVINGS.—Sw. Brit. Flow. Gard. 2nd Ser. t. 196 ; and our fig. 5, in Plate 45.

SPECIFIC CHARACTER.—Scabrous ; cauline leaves stem-clasping,

cordate-lanceolate, acuminate ; tube of the corolla long, filiform, five times longer than the subfoliaceous calyx ; lobes of corolla ovate-lanceolate, acute.—(*G. Don.*)

DESCRIPTION, &c.—A very elegant species, from the great length and slenderness of the tube of the corolla, which is delicately white on its inner surface, and greenish outside. The plant is of rather low growth, rarely exceeding two feet, and the leaves are of much feebler texture than those of most of the other species. The

flower does not expand till evening, or in cloudy weather. This species is a native of Chili and Buenos Ayres, and it was introduced in 1832. Seeds may be purchased at any of the seed-shops; and they should be raised on a slight hotbed in March, and planted out in May, when they will come into flower in July, and continue producing a succession of blossoms till October, or till killed by the frost.

6.—NICOTIANA NOCTIFLORA, *Hook.* THE NIGHT-FLOWERING TOBACCO.

SYNONYME.—? *N. undulata*, *Vent.*

ENGRAVINGS.—*Bot. Mag.* t. 2785; *Swt. Brit. Flow. Gard.* t. 262; and our *fig.* 3, in Plate 45.

SPECIFIC CHARACTER.—Glandular and clammy, and beset with

adpressed hairs. Leaves petiolate, oblong-lanceolate, acute, undulately curled. Tube of corolla cylindrical, much longer than the calyx; segments of corolla equal, obcordately emarginate.—(*G. Don.*)

DESCRIPTION, &c.—A very interesting species, growing about two feet high, with an erect, but somewhat slender, branching stem. The leaves are small, and much waved at the margin. The flowers, which are produced in panicles, do not expand till evening; the corollas are white, and purple beneath. The flowers when expanded are very fragrant; but the plant is clothed with numerous short, clammy hairs, which have a very disagreeable smell when touched. The species is a native of the Andes, whence seeds of it were sent home by Dr. Gillies and Mr. Cruikshanks, in 1826. It succeeded quite well in the open border in the Glasgow Botanic Garden, where it flowered in the month of August. During the day, the plants made but little show; but towards evening, the flowers, which were during the day curiously folded up, slowly expanded, displaying by degrees their pure white surface, and yielding a delightful fragrance. Seeds may be procured in the principal seed-shops.

7.—NICOTIANA PERSICA, *Lindl.* THE PERSIAN, OR SHIRAZ TOBACCO.

ENGRAVINGS.—*Bot. Reg.* 1592; and our *fig.* 7, in Plate 45.

SPECIFIC CHARACTER.—Clothed with clammy down. Radical leaves oblong-spatulate; cauline ones sessile, half stem-clasping, acuminate,

hardly repand. Calyx acutely 5-toothed. Corolla salver-shaped, with a long clavate tube, and ovate, obtuse, emarginate, rather unequal segments.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of this species are very handsome, being green on the outside, and white within; they are produced in racemes, and are very sweet-scented at night. From the leaves is made the celebrated Shiraz tobacco, which is valued in proportion as the leaves of which it is composed are thick, tough, and uniformly yellow. To obtain this result, the plants are continually watered while they are growing; and when they have attained their full size, each plant is cut off close to the root, and stuck firmly into the ground. This is in September, when the heavy night-dews fall, and these soon change the leaves from green to the desired yellow. The leaves are then laid in heaps to heat, after which the stalks and midribs are thrown away, and the leaves are formed into cakes, which are pressed firmly together and packed in bags. When grown merely for ornament, the Shiraz tobacco is quite hardy, and only requires sowing in the open border.

8.—NICOTIANA ACUMINATA, *Sims.* THE POINTED-LEAVED TOBACCO.

SYNONYME.—*Petunia acuminata*, *Graham.*

SPECIFIC CHARACTER.—Downy. Leaves broad, lanceolate, acuminate, undulated, on longish petioles. Panicles few-flowered. Calyx

clothed with glandular down. Calycine segments narrow. Corolla with an elongated tube, and roundish obtuse segments.—(*G. Don.*)

DESCRIPTION, &c.—The flowers are whitish, and not very handsome. The species is a native of Valparaiso, whence it was introduced in 1828, by Dr. Gillies. It requires no other care than sowing in the open border, but we do not know where seeds are to be procured.

9.—*NICOTIANA REPANDA*, Willd. THE WAVED-LEAVED HAVANNAH TOBACCO.SYNONYMES.—*N. lyrata*, *H. B. et Kth.*ENGRAVINGS.—*Bot. Mag.* t. 2484.

SPECIFIC CHARACTER.—Leaves stem-clasping, cordate-spatulate, round-

ish, repandly undulated, sometimes lyrate. Tube of the corolla slender, very long. Segments of the limb ovate, acutish.—(*G. Don.*)

DESCRIPTION, &c.—The flowers are of a pale pink, and rather small; and the leaves are smooth, instead of being downy, as is generally the case with most of the other species. This species is a native of Cuba, particularly near Havannah, whence it was introduced by Mr. G. Don, in 1820; and the small Havannah cigars, sometimes called Queen's, are made from its leaves. It is hardy, and only requires sowing in the open border.

10.—*NICOTIANA NANA*, Lindl. THE DWARF TOBACCO.ENGRAVINGS.—*Bot. Reg.* t. 833.

SPECIFIC CHARACTER.—Leaves lanceolate, pilose.

Radical ones

longer than the solitary flowers. Corolla longer than the calyx, with obtuse segments.—(*G. Don.*)

DESCRIPTION, &c.—A very curious little species, not growing more than three or four inches high, with pure white flowers which rise from the axils of the leaves, and leaves of very delicate texture, from which the Portuguese prepare their finest tobacco. The Indians also set a high value upon it as a medicine. The species is rather rare, being only found on rocky mountains, where it flowers in June. It was introduced in 1823.

11.—*NICOTIANA MULTIVALVIS*, Lindl. THE MANY-VALVED TOBACCO.ENGRAVINGS.—*Bot. Reg.* t. 1057; and our *fig.* 4, in Plate 45.

SPECIFIC CHARACTER.—Clothed with viscid hairs or down. Leaves fleshy, ovate-lanceolate; lower ones petiolate. Flowers axillary,

solitary. Calyx many-parted. Capsules many-celled. Segments of corolla obtuse, deeply veined.—(*G. Don.*)

DESCRIPTION, &c.—This species, though it has showy flowers, has leaves of a peculiarly rank and almost fetid odour. It is, however, preferred to all others for smoking by the Indians on the banks of the Columbia. The calyx is inflated and ribbed, and when ripe, it divides into several valves. The plant grows two or three feet high, and flowers in August or September. The seeds should be raised on a hotbed in February, then transplanted into pots in March, and finally transferred to the open border, without breaking the ball of earth round the roots, in April or May; or they may be sown in the open border in March or April. It is a native of California, and was introduced in 1826.

12.—*NICOTIANA GLUTINOSA*, Lin. THE GLUTINOUS TOBACCO.SYNONYMES.—*Sairanthus glutinosus*, *G. Don*; *Nicotiana militaris*, Willd.; *Tabacum viridis*, *Mæsch.*ENGRAVINGS.—*Bot. Rep.* t. 484; *Swt. Brit. Flow. Gard.* t. 107; and our *fig.* 6, in Plate 45.

SPECIFIC CHARACTER.—Erect, branched, and villously clammy. Leaves petiolate, ovate-cordate, acuminate. Racemes terminal, erect, secund. Corollas clothed with clammy hairs outside.

DESCRIPTION, &c.—A very singular plant, which, though agreeing with the Tobaccos in most particulars, yet differs from them so much in the shape of its corolla, as to belong properly to another class and order, according to the Linnæan system (*viz. Didynamia angiospermia*, instead of *Pentandria monogynia*). To reconcile this discrepancy, Mr. Don has formed of this species a new genus, which he calls *Sairanthus*,—from *sairo*, to clean, and *anthos*, a flower; in allusion to the ringent corolla, which constitutes the distinctive mark of separation between this plant and the true Nicotianas. The plant grows from two to four feet high; its flowers are of a dull red, and it is covered with clammy hairs, very disagreeable to the touch. It is a native of Peru, and was introduced in 1759. The seeds are common in the seed-shops, and they require no other care than sowing in the open border, and thinning out if necessary.

OTHER SPECIES OF NICOTIANA.

The following have been introduced into our gardens.

N. LANCIFOLIA, *Willd.*; N. YBARRENSIS, *H. B. et Kunth.*

A native of Quito, with purple, bell-shaped flowers. Introduced in 1823. The plant grows from two to three feet high, and is clothed with clammy hairs.

N. PUSILLA, *Lin.*; N. HUMILIS, *Ehret.*

A low plant, not growing more than a foot high, with small yellowish-green flowers. A native of Vera Cruz. Introduced in 1733.

N. PANICULATA, *Lin.*; N. VIRIDIFLORA, *Cav.*

Flowers green, and produced in terminal panicles. A native of Peru. Introduced in 1752.

N. CERINTHOIDES, *Horne.*

Flowers greenish-yellow; capsule conical. A native of America. Introduced in 1821.

N. DILATATA, *Link.*

Flowers white, leaves large; the lower ones being generally a foot long and four inches broad. Introduced in 1820.

N. PLUMBAGINIFOLIA, *Viv.*; N. CRISPA, *Jacq.*

Plant scabrous and hairy, with narrow leaves and white flowers, which are of a rusty hue beneath. A native of South America. Introduced in 1816.

N. VISCOSA, *Lehm.*

Flowers white, and, as well as the whole plant, clammy. A native of Buenos Ayres. Introduced in 1821.

N. BONARIENSIS, *Lehm.*

Flowers white; plant downy, but not clammy. A native of Buenos Ayres. Introduced in 1821.

N. QUADRIVALVIS, *Pursh*, *Bot. Mag. t. 1778.*

The whole plant clammy, with an unpleasant smell. Flowers white, and capsule four-valved. A native of the banks of the Missouri. Introduced in 1811.

N. ALATA, *Link et Otto.*

A native of Brazil. Introduced in 1829. The stem is winged; whence the name.

GENUS II.

SOLANUM, *Tourne.* THE SOLANUM, OR NIGHTSHADE.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx 5-cleft, rarely 4-cleft. Corolla rotate, rarely campanulate, usually 5-cleft. Anthers connivent, dehiscing by pores at the apex. Berry 2, rarely 4-celled.—(*G. Don.*)

DESCRIPTION, &c.—The flowers of all the species bear a great resemblance to those of the potato, which we should probably think very ornamental if they were not so common, and the berries are generally very showy. There are many annual species; but some of them, such as the Egg-plant, require the protection of a stove, and others are not yet introduced, or have been lost to our gardens; we shall therefore describe very few.

1.—*SOLANUM FONTANESII*, *Dunal*. DESFONTAINES' NIGHTSHADE.SYNONYME.—*Nycterium Fontanesium*, *Loud. Hort. Brit.*ENGRAVINGS.—*Bot. Mag.* t. 177 ; and our *fig.* 5, in Plate 46.

SPECIFIC CHARACTER.—Stem rather woody, though annual, prickly,

pilose. Leaves deeply pinatifid. Segments sinuated. Corollas almost regular. Anthers small ; lower one a little curved at the apex, brown.—(*G. Don.*)

DESCRIPTION, &c.—A coarse weedy-looking plant, growing three or four feet high, with yellow flowers and spiny calyxes. The stem and branches are also covered with strong spines ; and the leaves are very rough, much waved or curled at their edges, armed with prickles, and covered with a whitish down. The plant is supposed to be a native of Brazil, and it was introduced in 1813.

2.—*SOLANUM CAMPANULATUM*, *R. Br.* THE BELL-FLOWERED NIGHTSHADE.ENGRAVINGS.—*Bot. Mag.* t. 3672 ; and our *fig.* 6, in Plate 46.

SPECIFIC CHARACTER.—Prickles crowded, straight, subulate. Leaves

ovate, angularly-lobed, hairy, very prickly on both surfaces, as well as the calyxes. Racemes simple, armed. Corollas campanulate.—(*G. Don.*)

DESCRIPTION, &c.—A very handsome species, a native of New Holland, near Port Jackson, whence it was introduced in 1819, but being soon lost, it was re-introduced in 1837.

OTHER SPECIES OF *SOLANUM*.*S. RACEMIFLORUM*, *Don.* ; *S. SCABRUM*, *Jacq.*

Flowers white, but rose-coloured beneath ; berries large and red. A very handsome species, the native country of which is not known ; introduced in 1818.

S. ÆTHIOPICUM, *Lin.* ; *LYCOPERSICUM ÆTHIOPICUM*, *Mill.*

The flowers are white and drooping ; and the fruit is large, red, and resembling that of the *Tomato* or *Love-apple*. There are several varieties ; one with lilac flowers and large white fruit, another with dark purple fruit, and another with small yellow berries not larger than peas. The species is an old inhabitant of our gardens, having been introduced before 1597.

S. DILLENII, *Schultes.*

A native of Hungary, with small white flowers, and the berries marked with white dots. Introduced in 1818.

S. GUINEENSE, *Lam.*

The flowers are whitish, or of a pale violet colour ; and the berry is round, about the size of a small cherry, and black and shiny when ripe. A native of Guinea, introduced in 1817.

S. NIGRUM, *Lin.* THE GARDEN NIGHTSHADE.

This plant is common as a weed in gardens, and also in waste ground, throughout Europe. Its flowers are white ; and its berries, which resemble black currants, are poisonous. This is the *Verba mora* of the Spaniards, and the *Morelle à fruits noirs* or *Morelle crève-chien* of the French. There are several varieties, natives of the South of Europe ; but none of sufficient beauty to be deserving of cultivation.

S. FISTULOSUM, *Rich.*

The stems are hollow, but in other respects this species resembles *S. Guineense*. There are two varieties, one with black berries and the other with red ones. The species is a native of the East Indies, and was introduced about 1820.



1. *Datura tatula* — 2. *Datura stramonium* — 3. *Nicotiana glauca* —
 4. *Solanum elaeagnifolium* — 5. *Solanum elaeagnifolium* — 6. *Solanum elaeagnifolium*

S. INCERTUM, *Dun.*

There are many varieties of this species; some with black, some with red, and some with yellow fruit, all natives of India. The species was introduced in 1823.

S. RUBRUM, *Mill.*

A native of the East Indies, generally with the berries red or copper-coloured, introduced in 1817. There are above twenty other kinds which have been introduced, but which appear to be now lost.

GENUS III.

SARACHA, *Ruiz et Pavon.* THE SARACHA.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx 5-cleft. Corolla campanulately rotate, reflexed. Stamens bearded. Anthers separate, dehiscing lengthwise. Berry 2-celled, covered by the calyx to the middle.—(*G. Don.*)

1.—SARACHA PROCUMBENS, *Ruiz et Pavon.* THE PROCUMBENT SARACHA.

SYNONYMES.—*Atropa procumbens*, *Cav.*; *A. plicata*, *Roth.*; *Solanum procumbens*, *Dec.*; *Physalis solanaceæ*, *Ment.*; *Bellinia procumbens*, *Ræm. et Schultes.*

SPECIFIC CHARACTER.—Leaves twin, unequal, ovate, quite entire, glabrous in the adult state, but when young, villous on the margins and back. Flowers umbellate, drooping. Filaments glabrous.—(*G. Don.*)

DESCRIPTION, &c.—A procumbent plant, the flowers of which are cream-coloured, with a green margin, and the berries small and shining. A native of Peru, introduced in 1822. The genus *Saracha* was named by Ruiz and Pavon in honour of Isidore Saracha, a Benedictine monk, and a good botanist, who was the means of introducing many plants to the Botanic Garden at Madrid. The genus differs very slightly in a botanical point of view from *Solanum*, and the culture is the same as that of the different kinds of nightshade. We do not know where seeds are to be procured.

2.—SARACHA UMBELLATA, *Dec.* THE UMBELLATE-FLOWERED SARACHA.

SYNONYMES.—*Atropa umbellata*, *Roth.*; *A. Rothii*, *Poir.*; *Bellinia umbellata*, *Ræm. et Schultes.*

ENGRAVINGS.—Swt. Brit. Flow. Gard. t. 85.

SPECIFIC CHARACTER.—Erect, hairy, much branched. Leaves ovate, wrinkled, entire, shining, acute, scabrous; floral ones twin. Flowers umbellate, drooping. Filaments bearded at the base.—(*G. Don.*)

DESCRIPTION, &c.—This is the most common species of *Saracha*. It is a strong, vigorous-growing plant, with a thick, deeply channelled stem. The flowers, which are produced in umbels, are smaller than those of *S. procumbens*, but they are of the same colour. The berry is of a dark purple.

3.—SARACHA VISCOSA, *Schrad.* THE CLAMMY SARACHA.

ENGRAVINGS.—Swt. Brit. Flow. Gard., 2nd Ser. t. 323; and our fig. 4, in Plate 46.

SPECIFIC CHARACTER.—Clothed in every part with glandular pubescence, and viscid. Stem erect, suffruticose. Leaves twin,

cordate, acuminate, sinuately toothed, and sometimes entire. Peduncles umbellate. Throat of corolla woolly. Fructiferous calyx coloured.—(*G. Don.*)

DESCRIPTION, &c.—A very handsome plant: the stems are slender and graceful, growing about a foot high; the flowers large, cream-coloured, and marked with numerous olive-coloured spots; and the berry large and of a bright scarlet. The plant is a native of Mexico, whence it was introduced in 1835. It was at first treated as a greenhouse perennial; but it is now found to succeed best as an annual in the open air. The seeds are not common, but when they can be obtained, they only require sowing in March or April in the open border.

GENUS IV.

NICANDRA, *Adan.* THE ALKEKENGİ, OR KITE-FLOWER.*Lin. Syst.* PENTANDRIA MONOGNYIA.

GENERIC CHARACTER.—Calyx 5-parted, inflated. Segments sagittate. Corolla campanulate. Stamens incurved. Berry fleshy, 3—5-celled, covered by the calyx.—(*G. Don.*)

NICANDRA PHYSALOIDES, *Gærtn.* THE ALKEKENGİ, OR KITE-FLOWER.

SYNONYMES.—*Atropa physaloides*, *Lin.*; *Physalis peruviana*, *Mill.*; *P. daturæfolia*, *Lam.*; *Calydermos crosos*, *Ruiz et Pavon.*

ENGRAVINGS.—*Bot. Mag.* t. 2458: and our *fig.* 3, in Plate 46.

SPECIFIC CHARACTER.—Plant glabrous, much branched. Leaves twin. Flowers extra-axillary, solitary, drooping.

DESCRIPTION, &c.—A very strong, vigorous plant, growing from four feet to six feet high in favourable situations, and sending out numerous branches. The flowers are large and showy, and the fruit resembles that of the winter cherry, being enclosed in a large inflated capsule. The stem is purple, and the branches are reddish, the colour becoming brighter in the petioles or footstalks of the leaves, and often spreading down the mid-ribs. The plant is a native of Peru, from which country it was first sent to France. It was introduced into England in 1759, and it has ever since been a favourite in large gardens and shrubberies, though it should never be grown except where there is abundance of room. The name of *Nicandra* was given to this genus by Adanson in honour of the memory of Nicander, a Greek physician, who lived about a hundred and fifty years before Christ; *physaloides* alludes to the great resemblance between the berries of this plant and those of *physalis*, the winter cherry; and *Alkekengi* is its Peruvian name. The seeds are common in all the seed-shops, and they only require to be sown in rich earth in March or April, and then thinned out and transplanted, so as to leave those remaining in the bed at least three feet apart every way. This species is sometimes called the Peruvian Winter Cherry.

GENUS V.

DATURA, *Lin.* THE DATURA, OR THORN-APPLE.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx angular, 5-toothed, deciduous. Corolla conically funnel-shaped. Stigma 2-lobed. Capsule smooth, or echinated.—(*G. Don.*)

1.—DATURA STRAMONIUM, *Lin.* THE STRAMONIUM, OR COMMON THORN-APPLE.

SYNONYMES.—*Stramonium vulgare*, *Mench.*; *S. vulgatum*, *Gærtn.*; *S. foetidum*, *Scop.*; *S. spinosum*, *Lam.*

ENGRAVINGS.—*Eng. Bot.* t. 1288, 2nd ed. vol. ii. t. 315.

SPECIFIC CHARACTER.—Leaves ovate, angularly toothed, cuneiform at the base, smoothish, green. Capsule furnished with nearly equal-sized spines or prickles.—(*G. Don.*)

DESCRIPTION, &c.—A very remarkable plant, which, though not a true native of England, has now become common as a weed in this country, among rubbish, or on dunghills; being always found, however, near the habitations of men. It is a strong narcotic poison, but it has been much used as a medicine, and about twenty or thirty years ago, smoking part of the dried roots and stem was considered excellent for the asthma. Like

many other supposed remedies, it has however fallen into disuse ; and the *Stramonium* is now seldom grown except in shrubberies, or other places where there is abundance of room, and where a plant with large showy leaves is wanted to produce an effect.

2.—*DATURA TATULA*, *Lin.* THE TATULA, OR PURPLE THORN-APPLE.

SYNONYME.—*Stramonium Tatula*, *Mench.*

ENGRAVINGS.—Swt. Brit. Flow. Gard. t. 33; and our *fig. 1*, in Plate 46.

SPECIFIC CHARACTER.—Leaves cordate-ovate, angularly toothed, unequal at the base, glabrous. Capsule furnished with nearly equal spines or prickles.—(*G. Don.*)

DESCRIPTION, &c.—The stem is erect, much branched, and from a foot to eighteen inches high, of a dark purple, but marked with a few lighter-coloured spots. The leaves are very handsome, with dark red veins and margin. The flowers are of a pale purple or lilac, with dark-brown calyxes; and the fruit is erect and very thorny. The plant is found in great abundance on the mountains of the Caraccas; but it is also common over great part of North America. It was introduced before 1629, as it is mentioned by Parkinson. The seeds, which are common in the seed-shops, may be sown in the open border in April or May; or in March, if protected from frost by a hand-glass or flower-pot being put over them at night. They are sometimes raised on a slight hotbed, but they do better in the open ground, and they never flower well unless in the open air. They succeed best in a warm border of light rich earth, sheltered from the north; and in such a situation they will continue in blossom the whole summer, and indeed till late in autumn, ripening abundance of seeds.

3.—*DATURA FASTUOSA*, *Mill.* THE MAGNIFICENT THORN-APPLE.

SPECIFIC CHARACTER.—Leaves ovate, acuminate, repandy toothed, unequal at the base, and, as well as the stem, downy. Fruit tubercled.—(*G. Don.*)

DESCRIPTION, &c.—A magnificent plant, growing four feet or five feet high, with very large flowers, a native of the East Indies, Egypt, and South America. There are several varieties; one of which, a native of the East Indies, has double flowers, crimson on the outside and white within; another, a native of Malabar, has semi-double flowers, of a dark-purple on the outside and white within. This species was introduced before the time of Parkinson, 1629; but it is now seldom seen in our gardens, though one of its varieties may be procured in the seed-shops, under the name of the double purple *Stramonium*.

4.—*DATURA METEL*, *Lin.* THE METEL, OR HAIRY THORN-APPLE.

ENGRAVING.—Bot. Mag. t. 1440.

SPECIFIC CHARACTER.—Leaves cordate, quite entire, or a little | toothed, and, as well as the stem, downy. Limb of the corolla 10-toothed. Calyx terete. Capsule furnished with prickles.—(*G. Don.*)

DESCRIPTION, &c.—One of the commonest and smallest of the *Daturas*, seldom growing more than a foot or eighteen inches high. The flowers are white, and, like those of most of the other species, they fold up at night, the leaves rising to enshroud them. The flowers are erect, but when they fall, the capsule becomes drooping; it is very thorny, and part of the calyx which remains on, forms a curious kind of hood to it. This species is a native of the East Indies, Africa, and the Canary Isles. The seeds are common in the shops, and they require the same culture as the other species, with the exception that they will flower best when sown on a slight hotbed in February or March, and planted out in May.

5.—*DATURA CERATOCALA*, Ortega. THE HORNY-STEMMED THORN-APPLE.SYNONYME.—*D. macrocalis*, Roth.

ENGRAVINGS.—Bot. Reg. t. 1031 ; Bot. Mag. t. 3352 ; and our fig. 2, in Plate 46.

SPECIFIC CHARACTER.—Stem terete, purplish, dichotomous, horn-shaped, pilose at the base. Capsule size of a nut, glabrous, smooth.—(G. Don.)

DESCRIPTION, &c.—A magnificent plant, growing four feet or five feet high, with a round stem, which is horn-shaped at its extremities. The flowers are very large, white stained with purple, and sweet-scented. The capsule is smaller than in most of the other species, and not thorny. It is a native of Mexico, whence it was introduced in 1805 ; and it has also been found in *Cuba*. The culture is the same as that of *D. Tatula*.

OTHER SPECIES OF *DATURA*.*D. FEROX*, Lin.

Closely resembling *D. Stramonium*, except in the capsule being furnished with much larger and stronger prickles. A native of Cochin-China and Nepaul, introduced in 1731.

D. QUERCIFOLIA, H. B. et Kunth.

Nearly allied to *D. Tatula*, but with the leaves shaped like those of the common oak. The whole plant is slightly hairy. A native of Mexico, in the most temperate climates, and consequently quite hardy in England. Seeds may be had at Charlwood's, and they should be sown in the open border in March or April.

[*D. MURICATA*, Bernh.

Flowers long and white ; capsule warted ; but not prickly. Introduced in 1820, and supposed to be a native of the East Indies.

D. GUAYAQUILENSIS, H. B. et Kunth.

Very nearly allied to *D. Metel*, of which it is probably a variety. The flowers are white, and the stem and leaves downy. A native of humid places near Guayaquil, introduced in 1826. Seeds may be had at Charlwood's.

There are several other annual species of *Datura*, natives of South America, which have not yet been introduced. All the species are very handsome, and of very easy culture. The shrubby or tree species are now formed into a genus called *Brugmansia*, from several botanical differences in the flower and its calyx, and from the fruit of the *Brugmansia* being always smooth, while that of the *Datura* is generally prickly. All the species are poisonous ; and it is probably from this circumstance, united to the beauty of the flowers, that the *Datura* is considered in floral language to represent deceitful charms. The word *Datura* is said to be a corruption of *Tatorah*, the Arabic name of one of the species. *Metel* and *Tatula* are the names of the plants so called, in their native countries. *Stramonium* is a syncope of the Greek name for the Mad-apple (a kind of Nightshade), from a supposed resemblance between the fruit of the two plants.

GENUS VI.

HYOSCYAMUS, *Tourn.* THE HENBANE.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx ventricose. Corolla campanulately funnel-shaped. Limb unequal, with one of the segments larger than the rest. Stamens inclinate. Capsule immersed in the calyx, operculate. Placentas adnate.—(*G. Don.*)

1.—HYOSCYAMUS NIGER, *Lin.* THE BLACK OR COMMON HENBANE.

ENGRAVINGS.—Eng. Bot. t. 591, 2nd Edit. vol. ii. t. 316; and our *fig.* 5, in Plate 47. | semi-decurrent, stem-clasping, sinuated. Flowers almost sessile. Corolla reticulated. Teeth of the calyx mucronate.—(*G. Don.*)

SPECIFIC CHARACTER.—Clothed with clammy villi. Leaves sessile,

DESCRIPTION, &c.—The flowers of the Henbane, though not so showy as those of the *Datura*, are yet sufficiently handsome to seem very unsuitable to so poisonous a plant. The leaves, however, have a very strong and disagreeable smell, especially when burnt; and it has been observed of them, that when burning, they throw out sparks as though they had been sprinkled with salt. No animal can eat this plant with impunity, except perhaps the goat; and it is particularly destructive to poultry. It is a narcotic poison like opium, and it is used in medicine for the same purposes as that drug. The two plants also resemble each other in another point; viz. that the seeds of the Henbane, like those of the poppy, may be eaten with perfect safety. Among the medical uses of Henbane is one very remarkable one; it is, that oculists employ extract of Henbane to dilate the pupils of the eyes, when they want to perform any operation of peculiar delicacy; and they apply it by dropping a little of the solution into the eye. The pupil in a short time becomes fearfully dilated; and the effect of the Henbane continues several hours, without doing the least injury to the sight. The plant is a native of Britain, and it requires no other care than sowing the seeds in March or April in the open border.

2.—HYOSCYAMUS AUREUS, *Lin.* THE GOLDEN HENBANE.

SYNONYME.—*H. Creticus*, *Park.*

ENGRAVINGS.—Bot. Mag. t. 87; and our *fig.* 6, in Plate 47.

SPECIFIC CHARACTER.—Leaves petiolate, cordate-ovate, acute, an-

gularly-toothed. Flowers pedicellate; the three larger segments of the corolla undulated.—(*G. Don.*)

DESCRIPTION, &c.—A very beautiful species, usually grown as a greenhouse perennial, but which, if treated like a tender annual, and raised on a slight hotbed, will flower beautifully in the open air. It is a native of the south of Europe, and it was introduced before 1640. The plant is not above a foot high, and it will flower from March till October. It is very seldom found in collections; and we do not know where seeds can be obtained.

OTHER SPECIES OF HYOSCYAMUS.

H. AGRESTIS, *Kit.*; Swt. Brit. Flow. Gard. t. 27; *H. NIGER*, *Roxb.*; *H. NIGER*, *var. AGRESTIS*, *Nees.*; *H. NIGER*, *var. ANNUUS*, *Sims. Bot. Mag.* t. 2394; *H. BOHEMICUM*, *Schmidt.*

Flowers rather smaller than those of *H. niger*, and darker in colour. A native of Bohemia, introduced in 1820; probably a variety of *H. niger*, and requiring the same culture.

H. PALLIDUS, Waldst. et Kit.

Flowers pale yellow, without any dark veins. A native of Hungary, introduced in 1815.

H. ALBUS, Lin.

Flowers of a greenish yellow, with spots of green at the base of each petal. A native of the south of Europe, introduced in 1570.

H. MAJOR, Mill.

Flowers pale yellow, with dark purple spots at the base of the petals; a native of the Archipelago, introduced before 1596.

H. MUTICA, Lin.

Flowers dark purple on the inside, and dark purple on the outside; the limb cleft, and the two lower segments white; stamens purple. A native of Egypt, introduced in 1822.

H. PUSILLUS, Lin.

A dwarf plant, not above six inches high, with the flowers small, and yellow, with a violet-coloured base. A native of Persia, introduced in 1691.

H. AURICULATUS, Tenore.

Flowers of a bright yellow, veined with dark purple. A native of Naples, introduced in 1823.

GENUS VII.

PETUNIA, *Juss.* THE PETUNIA.*Lin. Syst.* PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Segments of the calyx foliaceous, spatulate. Corolla with a short tube, and a dilated, rather unequal limb. Stamens unequal, enclosed. Placentas adnate.—(*G. Don.*)

1.—PETUNIA NYCTAGINIFLORA, *Juss.* THE MARVEL OF PERU—FLOWERED, OR COMMON WHITE PETUNIA.

<p>SYNONYMES.—<i>Nicotiana axillaris, Lam.</i>; <i>N. nyctaginiflora, Lehm.</i> ENGRAVINGS.—Swt. Brit. Flow. Gard. 2nd Ser. t. 119; Bot. Mag. t. 2552; and our <i>fig.</i> 1, in Plate 47. SPECIFIC CHARACTER.—Diffuse, clothed with clammy glandular villi; lower leaves alternate, ovate-oblong, obtuse, pubescent, attenuated into</p>	<p>the petioles at the base. Floral leaves sessile, cordate-ovate, opposite. Flowers axillary, pedunculate. Corolla large, having the tube 3—4 times longer than the calyx, and the limb broad and obtuse.—(<i>G. Don.</i>)</p>
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DESCRIPTION, &c.—The white Petunia is so general a favourite, and so common everywhere, that it seems difficult to believe that twenty years ago its very existence was unknown among us. It is a native of South America, near the mouth of the Rio de la Plata, where it was discovered, and seeds of it were sent to Europe in 1823. It was first treated as a greenhouse plant; but as it was found to ripen abundance of seeds, and to propagate readily from cuttings, it was tried in the open air, and found to grow freely as a border flower. The seeds are sometimes raised on a hotbed; but this is unnecessary in the climate of London. They require a light peaty soil, or where this cannot be procured, a sandy loam; and their roots should never be suffered to become quite dry, as they are easily withered by exposure to heat. Too much wet is, however, very injurious, and when the Petunias are grown in pots, they should be frequently watered (say twice a day in hot dry weather), but they should never be suffered to stand in saucers. Petunia is from Petun, the name of Tobacco in Brazil.



1. *Petunia metastachyiflora*. . . 2. *Petunia phoenicia*. 3. *Thunbergia alata albiflora*.
 4. *Thunbergia alata* — 5. *Hyoscyamus niger*. — 6. *Hyoscyamus aureus*.

2.—PETUNIA VIOLACEA, *Lindl.* THE PURPLE PETUNIA.

SYNONYMES.—*Salpiglossis integrifolia*, *Hook.* ; *Nierembergia phœnicea*, *D. Don.* ; *Petunia phœnicea*, *Hort.*

ENGRAVINGS.—*Bot. Mag.* t. 3113, and t. 3556 ; *Bot. Reg.* t. 1626 ; *Swt. Brit. Flow. Gard.* 2nd Ser., t. 193 ; and our *fig.* 2, in Plate 47.

SPECIFIC CHARACTER.—Prostrate, clothed with clammy hairs or down. Leaves ovate, on short petioles, acute. Corolla ventricose, with ovate, acute segments. Flowers solitary, axillary, pedunculate. —(*G. Don.*)

DESCRIPTION, &c.—Perhaps no flower ever became a greater favourite in a short time than this. Scarcely ten years ago, in the autumn of 1830, Mr. Tweedie, a botanical collector, discovered it in Buenos Ayres, growing on the banks of the river Uruguay, and sent seeds of it to the Botanic Garden at Glasgow. It flowered there for the first time in Great Britain in July 1831 ; and it was soon after figured in the *Bot. Mag.* under the name of *Salpiglossis integrifolia*. As it was found to propagate readily both by cuttings and seeds, it soon spread over England, and became a general favourite. Not so strong in its stems as *Petunia nyctaginiflora*, it was more manageable ; and it was found to succeed equally well in a greenhouse and in the open air. So that its fine hair-like roots were permitted to grow in light fine soil, and that they were kept moist, without being suffered to get too wet, the plant might be trained in any form the grower pleased ; and so that it was allowed plenty of light and air, it was sure to reward its cultivator with a profusion of rich dark purple blossoms. The common modes of training this *Petunia* are against a trellis or wire frame, which it will soon cover, or over a bed in the open ground ; the latter being the mode now most generally adopted. When the *Petunia* is wanted for covering a bed in a geometrical flower-garden, the seeds are generally sown in autumn, or early in February ; and the young plants are kept in pots till they are ready for planting out in May. In planting the balls of earth out of the pots, they are generally laid on one side, so that the plants are ready for pegging down without bending them. In about a fortnight, the bed over which the *Petunias* were pegged down, will be covered with a number of upright shoots, each rising only a few inches from the ground, and each producing a succession of blossoms. As the old flowers drop off, fresh ones will expand, and the bed will continue to present a splendid mass of rich dark purple from May or June till the plants are destroyed by frost. There are many hybrids and varieties of this species, as it is found to hybridize freely with the white *Petunia*, and as new kinds are being continually raised from seed. Some of these hybrids, or varieties, are very large, of a pale lilac, and very fragrant ; and others (particularly that generally called *Petunia splendens*) are of a rich dark crimson shade of purple. They are all of the easiest culture, and merely require scattering the seeds on any common garden soil, to grow and flower freely ; though no plant better repays care bestowed on its cultivation. The *Petunias* with a dark centre are generally partly derived from *P. bicolor*, the flowers of which have a dark centre, and are curiously streaked and veined ; but all these are much more tender than the others, and more difficult to propagate by seed. All the kinds strike readily from cuttings, without any artificial heat.

OTHER ANNUALS BELONGING TO THE ORDER SOLANACEÆ.

The Tomatos (*Lycopersicum*), some of the kinds of Capsicum, several of the kinds of Winter-cherry (*Physalis*), and the Egg-plant (*Solanum Melongena*), are all more or less ornamental in their fruit, though they are seldom cultivated solely on that account. Very beautiful preparations may be made from the fruit of the winter-cherry, the common thorn-apple, and the kite-flower, by macerating them ; that is steeping them in water, till only the fibrous part of the calyx remains, which looks like a net enclosing the fruit.

CHAPTER XLII.

ACANTHACEÆ.

ESSENTIAL CHARACTER.—Calyx usually 5-leaved, persistent. Corolla monopetalous, the limb ringent, or 2-lipped, the lower lip over-lapping the upper in æstivation. Stamens mostly two, both bearing anthers, hypogynous. Stigma 2-lobed, rarely undivided.

Capsule 2-celled, the cells two or many seeded, bursting elastically with 2 valves. Seeds roundish, hanging by the ascending processes of the placenta; testa loose; albumen none. Herbs or shrubs chiefly tropical.

GENUS I.

THUNBERGIA, *Lin.* THE THUNBERGIA.

Lin. Syst. DIDYNAMIA ANGIOSPERMIA.

GENERIC CHARACTER.—Calyx double; exterior in 2 leaves, interior shorter than the other, and laciniated with 12 awl-shaped teeth. Corolla campanulate, tube inflated, limb 5-lobed, equal. Stigma 2-lobed. Capsule globose, beaked, and divided into 2 cells.

DESCRIPTION, &c.—The genus *Thunbergia* contains several splendid hothouse climbers; two of which, and perhaps more, will succeed perfectly if treated as annuals and grown in the open air. All the species are very handsome, and they are of different and very opposite colours; one species (*T. grandiflora*) having purplish-blue flowers; another (*T. coccinea*), scarlet; another (*T. fragrans*), white; and another (*T. aurantiaca*), bright orange, while the commonest kind, *T. alata*, is of a pale buff. They are nearly all natives of the East Indies, and are all well deserving of cultivation.

1.—THUNBERGIA ALATA, *Bojer.* THE WINGED THUNBERGIA.

ENGRAVINGS.—Bot. Mag. t. 2591; Bot. Cab. t. 1045; Paxt. Mag. of Bot., vol. ii. p. 2; and our *fig.* 4, in Plate 47.

VARIETY.—*T. a.* 2 albiflora, Hook's Bot. Mag. t. 3512; *T. a. var.* alba, Paxt. Mag. of Bot., vol. iii. p. 28; and our *fig.* 3, in Plate 47. An accidental variety raised from seeds of *T. alata* in the Clapton

Nursery in 1836, and only differing from the species in the colour of its flowers.

SPECIFIC CHARACTER.—Stem twining. Leaves triangularly-cordate, sinuately toothed, 5-nerved. Petioles winged.

DESCRIPTION, &c.—The extraordinary beauty of *Thunbergia alata* has long rendered it a general favourite; and the gardeners generally give it the pet name of Black-eyed Susan. The only objections to its culture were that it was at first supposed to require the heat of a stove, and that it was found to be peculiarly liable to the attacks of the red spider (*Acarus tellarius*). The first of these objections was soon obviated, as it was first found to thrive in the temperature of the greenhouse, and afterwards to succeed when treated as an annual in the open air; but the second objection still retains its force, as we know of few plants more liable to be infested by the red spider, or from which it is more difficult to dislodge it. The best mode of getting rid of this little enemy is to syringe the plant well and frequently over the leaves with hot water, heated to 120°, as a less heat will not destroy the insects. When the plants are grown in the open air, they have, however, much fewer red spiders on them than when they are grown in a stove.

Thunbergia alata is a native of the East Indies, and seeds of it were first sent to this country in 1823, from the Mauritius, by Mr. Telfair, to the late Mr. Barclay of Bury Hill, by whom so many interesting plants were introduced into England. When the plant is treated as a greenhouse climber, it is generally propagated by cuttings; but when it is grown as an annual, the seeds are gathered as soon as they are ripe in October, and they

are kept in their hard, horned capsule till January. The seeds are curiously shaped, and look as if they were covered with net-work ; they should be sown in a soil composed of nearly equal parts of peat-earth, or vegetable mould, and sand. The earth in which the seeds are sown should be kept constantly moist ; but it should be well drained, as the plants will wither if either the roots are suffered to become quite dry, or if they are kept in stagnant water. The plants are generally raised on a slight hot-bed, and planted out in May ; but in warm sheltered situations, they may be sown where they are intended to remain. As to their after culture, when sown in the open ground, they may either have the points of their shoots repeatedly taken off, so as to make them form bushy plants, or the long slender stems, instead of being twined round any object, may be laid over the bed, and pegged down at the joints. Where trouble is not an object, the plants may be grown in pots and shifted many times, as directed for *Rhodanthe Manglesii*. Seeds are common in the seed-shops. The variety appears more tender than the species.

CHAPTER XLIV.

GENTIANÆ.

<p>ESSENTIAL CHARACTER.—Calyx 4—5-cleft, permanent. Corolla monopetalous, with an equally-parted limb ; imbricate in æstivation. Stamens epipetalous, equal in number to the segments of the corolla, and alternating with them, some of them abortive. Stigmas 1—2.</p>	<p>Capsule (sometimes a berry) many-seeded, 1—2-celled, usually 2-valved. Embryo straight, enclosed in the axis of a soft fleshy albumen. Herbs, rarely shrubs, usually glabrous. Leaves opposite, entire, exstipulate. Flowers terminal, or axillary.</p>
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GENUS I.

GENTIANA, *Lin.* THE GENTIAN.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Corolla campanulately funnel-shaped, 4—5-cleft. Stigma 2-lobed. Seeds roundish or oblong.—(*G. Don.*)

DESCRIPTION, &c.—All the different kinds of Gentian are remarkable for the beauty of their flowers, and many of them for the medicinal properties of their roots. The genus Gentian of Linnæus has been divided into several genera ; but we shall retain the old names, as they are those under which the species are distinguished in Plate 47, marking, however, the new names as synonymes. The name of Gentiana is perhaps the oldest example extant of the custom of naming plants after some person ; as it is said to have been named in honour of Gentius, King of Illyria, whose health had been restored by the use of the root of one of the species as a tonic.

1.—GENTIANA QUINQUEFLORA, *Lin.* THE FIVE-FLOWERED GENTIAN.

<p>SYNONYMES.—<i>G. amarelloides</i>, <i>Pursh.</i> ; <i>Hippion quinqueflorum</i>, <i>Schmidt</i>. ENGRAVINGS.—<i>Bot. Mag.</i> t. 3496 ; and our <i>fig.</i> 4, in Plate 48. SPECIFIC CHARACTER.—Stem tetragonal, branched. Leaves stem-</p>	<p>clasping, oval, acute, 3-nerved. Flowers terminal and lateral, 3—5 together, on short pedicels. Corolla tubularly campanulate, 5-cleft. Throat naked. Segments lanceolate, acuminate with simple plicæ. Calycine segments very short, narrow.—(<i>G. Don.</i>)</p>
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DESCRIPTION, &c.—A very pretty plant, growing about a foot high. It was originally introduced in 1824, but it was soon lost, and it was not reintroduced till 1835. It is a native of North America, where it was found in abundance, growing on the grassy banks of streams among the Alleghany Mountains. It requires no other care than sowing in the open border, and occasional waterings if the weather should prove dry.

2.—GENTIANA AMARELLA, *Lin.* THE BITTER, OR AUTUMNAL GENTIAN.

SYNONYMES.—*G. lanceifolia*, *Raf.* ; *G. tetragonia*, *Mayer* ; *G. campestris*, *Geners.* ; *G. pyramidalis*, *Willd.* ; *G. axillaris*, *Rehb.* ; *Hippion axillare*, *Schmidt.* ; *Swertia corniculata*, *Barrel.* ; *Eurythalia amarella*, *Bork.*

ENGRAVINGS.—Eng. Bot. t. 235, 2nd ed. vol. ii. t. 377 ; and our *fig.* 6, in Plate 48.

SPECIFIC CHARACTER.—Stem tetragonal, paniculately branched at top ; branches shorter than the internodes. Leaves ovate-lanceolate, 3-nerved. Corolla 5-cleft. Segments ovate-acute, with bearded plicæ inside at the base.—(*G. Don.*)

DESCRIPTION, &c.—This plant has been placed by modern botanists in the genus *Eurythalia*. It is a native of Britain, and takes its specific name of *Amarella* from its intense bitterness. It is a dwarf plant, seldom, if ever, rising higher than six inches, and it requires no other care than sowing in any dry exposed situation. A calcareous soil suits it best. There are many varieties of this species.

3.—GENTIANA NIVALIS, *Lin.* THE SNOWY, OR SMALL ALPINE GENTIAN.

SYNONYMES.—*Ericala nivalis*, *Bork.*

ENGRAVINGS.—Eng. Bot. t. 896, 2nd ed. vol. ii. t. 376 ; and our *fig.* 5, in Plate 48.

SPECIFIC CHARACTER.—Stem simple or branched. Branches alter-

nate, 1-flowered. Radial leaves crowded, ovate, acutish ; cauline ones lanceolate. Calyx tubular, 5-toothed, with acute hardly keeled angles. Corolla funnel-shaped, 10-cleft ; the accessory segments bifid.—(*G. Don.*)

DESCRIPTION, &c.—A most beautiful little plant, with vivid dark-blue flowers. A native of Scotland, and indeed found in every part of Europe, from Lapland to the Pyrenees. There are many varieties, the most striking of which is one with white flowers. This species, from the brilliant colour of its flowers, its erect, though dwarf habit of growth, and the neatness of its foliage, is very ornamental, and it is well adapted for filling a bed in a geometric flower-garden. The seeds should be sown in a light peaty or sandy soil, well drained, and they will require no other culture. Modern botanists consider this plant as belonging to the genus *Ericala*.

OTHER ANNUAL SPECIES OF GENTIANA.

G. AUREA, *Lin.*

The flowers of this species becoming yellow when dry, Linnæus gave it the name of the *Gentiana aurea*, literally Golden Gentian ; but, according to Wahlenberg, the flowers are white. It is a native of Lapland, and it is said to have been introduced in 1823.

G. GERMANICA, *Willd.* ; *EURYTHALIA GERMANICA*, *Mayer.*

The stem is purplish, and angular ; the root is yellow, and the flowers of a purplish blue with a white beard. It is a native of Germany, and it was introduced in 1818. The four following kinds are also comprehended in the modern genus *Eurythalia*.

G. OBTUSIFOLIA, *Willd.*

This species, which is sometimes called the Mountain Gentian, is a native of Switzerland, where it covers large tracts with its bright purple flowers, that assume a yellowish hue when they fade. It is very nearly allied to *G. Germanica*. It was introduced in 1826.

G. PRÆTENSIS, *Fœrl.*

Nearly allied to *G. Germanica*, but taller and more branched. A native of Russia, introduced in 1817.

G. CAMPESTRIS, *Lin.*

The common or field Gentian is a British plant, with purplish blue or white flowers; so bitter, that the country people use it when dry instead of hops to their beer. It is also occasionally used as a tonic in medicine.

G. GLACIALIS, *Vill.*

A beautiful little plant, with dark blue flowers, very nearly allied to *G. nivalis*. A native of Lapland, introduced in 1819.

G. CARINTHIACA, *Frœl.*; SWERTIA CARINTHIACA, *Wulf.*; PLEUROGYNIA CARINTHIACA, *G. Don.*

The flowers are of a pale blue above, and white or lilac beneath. A native of Carinthia, introduced in 1817.

G. UTRICULOSA, *Lin.*; ERICALA UTRICULOSA, *Bark.*

The flowers are salver-shaped, of a beautiful blue, with the tube striped with blue and white. The calyx is inflated, and has five prominent wings; and the root is fusiform and yellow. A native of Europe, from the Baltic to the Mediterranean, introduced in 1822.

GENUS II.

CHLORA, *Ren.* THE YELLOW-WORT, OR YELLOW CENTAURY.*Lin. Syst.* OCTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx 4—8-parted. Corolla salver-shaped, 4—5-parted. Stamens 8. Filaments very short. Anthers linear, erect. Stigma 2—4-cleft. Capsule oval-oblong. Seeds minute.—(*G. Don.*)

CHLORA PERFOLIATA, *Lin.* THE PERFOLIATED YELLOW CENTAURY, OR COMMON YELLOW WORT.

ENGRAVINGS.—Eng. Bot. t. 60, 2nd Edit. vol. iii. t. 561; and our *fig. 2*, in Plate 48.

SPECIFIC CHARACTER.—Glaucous. Leaves perfoliate. Stem dichotomous, cylindrical. Flowers corymbose, with a flower in each fork. (*G. Don.*)

DESCRIPTION, &c.—This plant, though a native of Britain, requires so much care to cultivate it, that it is very seldom grown; though it is so pretty that it well deserves to become a garden flower. It requires an open hilly situation, and a loamy soil, with a substratum of chalk or limestone; and without these advantages it seldom succeeds in the open garden, though it may be grown tolerably well in calcareous soil and in well-drained pots. *Chlora* is from the Greek word *Chloros*, pale.

C. IMPERFOLIATA, *Lin.*

This species differs from *C. perfoliata* in the leaves being not perfoliate; they are said to be perfoliate when the stem appears to pass through them, like the leaves and stem of the common honeysuckle, *C. aprifolium* *imperfoliata*. It is a native of Italy, and was introduced in 1823.

GENUS III.

PLADERA, *Solander*. THE PLADERA.

Lin. Syst. TETRANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx tubular, 4-toothed. Corolla funnel-shaped, limb irregular. One of the stamens is shorter than the rest. Stigma 2-lobed. Capsule 1-celled, 2-valved. Seeds numerous.

1.—PLADERA DECUSSATA, *Roxb.* THE DECUSSATE PLADERA.

ENGRAVINGS.—Bot. Mag. t. 3066; and our *fig.* 3, in Plate 48.

SYNONYMES.—*Canscora decussata*, *Wall.*; *Exaeum alatum*, *Roth.*

SPECIFIC CHARACTER.—Erect. Stem and branches 4-winged, the

latter cross-armed. Leaves ovate-lanceolate, acute, 3-nerved, sessile; terminal peduncles trichotomous. Flowers pedicellate; axillary ones solitary.—(*G. Don.*)

DESCRIPTION, &c.—An East India plant of very little beauty, introduced in 1816, and growing about a foot high. It is rather tender; and it requires to be raised on a hotbed, and not planted out till June. *Pladera* signifies a moist place.

P. VIRGATA, *Roxb.*

This plant has many synonymes. It is a native of the East Indies, whence it was introduced in 1820, and it has small rose-coloured flowers.

P. PERFOLIATA, *Roxb.*

This species has large, pale rose-coloured flowers, and grows about two feet high. It is a native of Malabar, where it is called *Kansjan cora*, and where the native women use it to ornament their hair. It has not yet been introduced.

GENUS IV.

ERYTHRÆA, *Renealm.* THE LESSER CENTAURY.

Lin. Syst. PENTANDRIA MONOGYNIA.

GENERIC CHARACTER.—Calyx 5-cleft. Corolla funnel-shaped, with a short 4—5-parted limb. Anthers spiral in the old state. Style erect. Stigmas 2, roundish.—(*G. Don.*)

1.—ERYTHRÆA CENTAURIUM, *Pers.* THE COMMON LESSER CENTAURY.

SYNONYMES.—*Chironia Centaurium*, *With.*; *Gentiana Centaurium*, *Lin.*

ENGRAVINGS.—Eng. Bot. t. 417, 2nd edit. vol. ii. t. 320; Wood. Med. Bot. t. 157; and our *fig.* 8, in Plate 48.

SPECIFIC CHARACTER.—Stem tetragonal, dichotomously panicled, corymbose. Leaves ovate-lanceolate, 3-nerved. Calyx shorter than the tube of the corolla.—(*G. Don.*)

DESCRIPTION, &c.—A British plant, with pink flowers, of which there are many varieties. The species grows about a foot high, in dry gravel or chalk; but it perishes if transferred to a soil richly manured. It is a powerful bitter; and when steeped in gin, or any other strong spirit, it is taken as a tonic by the labouring classes. As a garden flower, it is only suitable for rock-work, or hard gravelly banks, where scarcely anything else will grow. *Erythræa* is from *Erythros*, red flowers.



1. *Erythraea aggregata* — 2. *Chlora porfoliata*. — 3. *Pludera decussata*.
 4. *Gentiana quinqueflora*. 5. *Gentiana nivalis*. — 6. *Gentiana amarilla*.
 7. *Erythraea littoralis* — 8. *Erythraea centaureum*.

2.—*ERYTHRÆA LITTORALIS*, *Fries*. THE SEA-SHORE, OR DWARF-TUFTED CENTAURY.

SYNONYMS.—*Chironia littoralis*, *Turn. et Dill.*; *C. pulchella*, *Don.*

ENGRAVINGS.—*Eng. Bot.* t. 2305, 2nd edit. t. 321; and our *fig.* 7, in Plate 48.

SPECIFIC CHARACTER.—Stem simple or branched, dwarf, tetragonal. Leaves ovate-oblong, obtuse. Flowers crowded, sessile, fasciculate. Calyx about equal in length to the tube of the corolla.—(*G. Don.*)

DESCRIPTION, &c.—A very beautiful little British plant, with tufts of pink flowers, growing on the sea-coast. It is well deserving of cultivation, and is admirably adapted for rock-work.

3.—*ERYTHRÆA AGGREGATA*, *Sweet*. THE CLUSTER-FLOWERED ERYTHRÆA.

ENGRAVINGS.—*Brit. Flow. Gard.* t. 137; and our *fig.* 1, in Plate 48.

SPECIFIC CHARACTER.—Stems tetragonal, much branched, decumbent; branches dichotomous, aggregate, few-flowered. Flowers sessile.

Leaves spatulate, obtuse, 1-nerved, tapering into the petioles at the base. Bractees linear, obtuse, rather longer than the calyx. Calyx twice shorter than the tube of the corolla.—(*G. Don.*)

DESCRIPTION, &c.—A beautiful little plant, growing in tufts about three inches high, with dark rose-coloured flowers. A native of the south of Europe; introduced in 1824. It is admirably adapted for rock-work, or it may be grown in small pots, in sandy loam and peat. It does best sown in autumn, and kept in pots during the winter, under a hand-glass, or in a cold frame. Thus treated, it will come into flower in March, and will continue producing a succession of blossoms till November.

OTHER SPECIES OF *ERYTHRÆA*.

E. CACHONLABUM, *Ram. et Schultes*; *GENTIANA PERUVIANA*, *Lour.*

This species yields the celebrated tonic medicine of South America, called there *Cahan laquen*, and mentioned by Humboldt. It is a native of Chili and Peru, and was introduced in 1825.

E. SPICATA, *Pers.*; *GENTIANA SPICATA*, *Lin.*

This is the only species of *Erythræa* that has its flowers disposed in spikes; their colour is pink or white, and they are very ornamental. The species is a native of Italy, and it was introduced in 1820.

E. LATIFOLIA, *Smith.*

This is a British species, which only differs from *E. littoralis* in the leaves being broader.

E. PULCHELLA, *Fries.*


A British species, the flowers of which close at 11 o'clock in the evening, and which has been for this reason included in the floral clock, described by many writers.

E. MARITIMA, *Pers.*

A native of Tangiers on the sea-side, with bright yellow flowers. It was introduced in 1777, and as it never grows above four or five inches high, it is a valuable flower for rock-work.

E. LUTEA, *Ram. et Schultes.*

Closely resembling the preceding species, but a native of Italy on mountains.

 The plants enumerated in the preceding pages may be said to comprise all the ornamental annual flowers grown in British gardens ; at least they are all of which we have been able to obtain any account. Most of them are to be obtained at seed-shops and nurseries ; and the others are all easily attainable if a demand were created for them.

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GLOSSARY.

- ABORTIVE.** Imperfectly developed, not fertile.
- Achenium.** A dry fruit which does not open when ripe, and contains only one seed.
- Aconite.** From *Aconitum*, the botanic name of the Monkshood.
- Acumen.** A long taper point.
- Acuminated.** Ending in a long sharp point.
- Adnate.** Adhering to. Adnate anthers are when they are attached to the filaments throughout their whole length.
- Adpressed.** Closely pressed together.
- Aduncum.** Hooked.
- Æstivation.** In the bud.
- Æqualis.** Composite flowers, in which all the florets are bisexual.
- Aggregate.** Clustered.
- Ajaxis.** From the name of the Grecian hero Ajax. See p. 8.
- Alæ.** The wings of a pea-flower.
- Alata.** Winged.
- Alba.** White.
- Albicaulis.** White-stemmed.
- Albumen.** The white part of the seed.
- Alyssum.** Madwort; because it was supposed to cure Hydrophobia.
- Ambiguum.** Doubtful.
- Anagallis.** From *Anagelao*, to laugh; because the plant was said to cure despondency.
- Androsace.** From *aner*, a man, and *sakos*, a buckler, in allusion to the form of the calyx.
- Angiospermia.** Bearing the seeds in a capsule.
- Anther.** The pollen-bearing part of the stamen.
- Anthephorum.** An elongated receptacle, on which the petals, stamens, and ovary, are seated.
- Annual.** Lasting only one year.
- Annular.** Ring-shaped.
- Apaleate.** Without palæ.
- Apex.** Top, highest part.
- Appendages.** Those parts of a flower which do not come under any of the regular divisions.
- Appendiculate.** Having appendages.
- Approximating.** Approaching near to.
- Arabis.** Because some of the species were found in Arabia.
- Arcuate.** Curved, or bent like a bow.
- Arenarium.** Sand.
- Areola.** A little space between two raised places.
- Argemone.** From *Argema*, a cataract of the eye.
- Aril.** A thick tough covering to the seed.
- Aristata.** Bristled.
- Aristately.** Bristly.
- Articulated.** Distinctly jointed so as to separate readily in the hand.
- Arvensis.** Field.
- Aspera.** Rough.
- Assurgent.** Rising upwards.
- Attenuated.** Narrowing gradually.
- Aurantiaecum.** Orange.
- Aureum.** Golden yellow.
- Auricled.** Eared.
- Autumnalis.** Autumn.
- Awned.** Terminating in a long bristle, like the ears of barley.
- Axillary.** Springing from the axils or fork of the leaves or branches.
- Baccate.** Berry-like; that is, the seeds buried in a fleshy substance like those of the gooseberry and currant.
- Bartonia.** In honour of Dr. Barton, Professor of Botany at Philadelphia.
- Beaked.** Ending in a hard, beak-like point.
- Bibracteate.** With two rows of bracteas.
- Bicalcarate.** Two-spurred.
- Bicornate.** Two-horned.
- Bifid.** Divided into two parts, or two-cleft.
- Bifrons.** Two-faced.
- Bigibbous.** Having two protuberances.
- Bilabiate.** Two-lipped.
- Bilamellate.** Having two plates, or being divided into two parts.
- Bilobed.** Two-lobed.
- Biovulate.** Containing two ova, or incipient seeds.
- Bipinnate.** Twice pinnate.
- Biscutate.** Resembling two bucklers.
- Biseutella.** From *bis*, double, and *seutella*, a saucer, in allusion to the shape of the seed-pod.
- Bisexual flowers.** Those that have both stamens and pistils.
- Blumenbachia.** In honour of Dr. Blumenbach, Professor of Medicine at Gottingen.
- Bracteas.** The small leaves or membranes just below the flower.
- Braeteoles.** Small bracteas.
- Cakile.** The Arabic word used for the plant so called.
- Calcarate.** Spurred.
- Callous.** Hardened.
- Calycine.** Belonging to the calyx, or part of it.
- Calyculated.** Having the bracteas so placed as to resemble an additional calyx.
- Calyptate.** Shaped like an extinguisher.
- Campanulate.** Bell-shaped.
- Canescent.** Covered with very short white down.
- Capitate.** Spreading so as to form a head.
- Capsule.** A dry seed-vessel.
- Carpels.** Seed-vessels.
- Cardiopetalum.** Heart-shaped petals.
- Carina.** The keel of a pea-flower.
- Cartilaginous.** Gristly.
- Caulcescent.** With a kind of stem.
- Cauline leaves.** Those growing on the stem.
- Chalaza.** The projecting point in a seed opposite the hilum, with which it is connected by a slight cord-like projection, called a rapha. These parts are very conspicuous in some seeds, as in those of the orange; but scarcely visible in others.
- Chanuelled.** Marked with deep furrows.
- Ciliated.** Fringed with hairs like eyelashes.
- Citrina.** Lemon-coloured.
- Clarkia.** In honour of Captain Clarke, its discoverer.
- Clavate.** Club-shaped; becoming thicker towards the apex.
- Claviculate.** Somewhat club-shaped.
- Claw.** A long narrow part of the petal inserted in the calyx, like the petals of the pink and the carnation.
- Cleome.** From *Kleio*, to shut.
- Coarctata.** Compressed, and crowded together.
- Cochleate.** Twisted, so as to resemble the shell of a snail.
- Cohere.** Grow together.
- Cohering.** Adhering together.
- Commissure.** The smooth inside of an articulated joint.
- Comose.** Hairy, covered with coma, that is, tufts of fine short hairs.
- Compacta.** Compact.
- Compost.** Soil composed of several ingredients.
- Concrete.** Formed into one mass; joined together.
- Conuate.** Joined together at the base.
- Connective.** A part of the stamen, distinct from the filament, which attaches the cells of the anthers to each other.
- Conniving.** Converging, or inclining together.
- Connivent.** Lying very close together.
- Consolida.** Healing.
- Convolute.** Rolled outwards, or two parts rolled together over each other.
- Coriaceous.** Leathery.
- Corniculate.** Horned.
- Corolla.** The whole of the petals of the flower.
- Coralline.** Belonging to the corolla.
- Coronopifolia.** Buckhorn-leaved.
- Corrugated.** Wrinkled.

- Corticate. Like bark.
 Corymb. A head of flowers, the top of which is nearly flat, the footstalks of the outer flowers being longer than those in the centre.
 Cotyledons. The solid parts of the seed, which afterwards divide, and become the seed-leaves.
 Crassipes. Fleshy.
 Crenated. Notched.
 Crenatures. Notches.
 Crenulated. The edge cut into small round notches.
 Cruciate. In the form of a Maltese cross.
 Crustaceous. Having a hard brittle covering.
 Cucullate. Hooded.
 Cumulated. Thrown together in heaps.
 Cuneated. Wedge-shaped.
 Cuphea. From Kuphos, curved, alluding to the form of the capsule.
 Cuspidate. Suddenly tapering to a point.
 Cyanæa. Blue, like the colour of the Cyanus or Corn bluebottle.
 Cymes. When the flowers form a flattened panicle; and are produced on short branches growing from one foot-stalk. The flowers of the Elder and Laurustinus are produced in cymes.
 Cymose. Flowering in cymes.
- Damascena. Damascus.
 Decandria. Having ten stamens.
 Deciduous. Losing its leaves in winter.
 Declining. Bending downwards.
 Decomound. Twice or thrice compound.
 Decumbent. Lying on the ground.
 Decurrent. Running down, as for example when a leaf extends along the petiole.
 Decussate. With the branches forming right angles.
 Deflexed. Bent downwards.
 Dehiscent. Opening naturally, as the pods of peas, &c., do when over ripe.
 Dentata. Toothed.
 Denticulated. Toothed.
 Diadelphia. Where the stamens are connected into two distinct bundles.
 Diaphanous. Transparent.
 Dichotomous. In two rows, or in pairs.
 Didiscus. With two disks.
 Didymous. Twin, two united.
 Diffuse. Spreading loosely.
 Digynia. With two styles.
 Discoid. Flat and round, like a disk.
 Disk. A round flat surface, sometimes applied to a head of flowers, and sometimes to the receptacle. In composite flowers the disk is the centre; as for example, it is the yellow part of a daisy.
 Dissepiments. The partitions by which a seed-vessel is divided internally.
 Divaricate. Straggling; spreading widely in different directions.
 Diverging. When two parts grow close together at their base, and divide, turning different ways, so as to be widely apart at their summit.
 Dodecandria. Having twelve stamens.
 Drupaceous. Where the seed is enclosed in a stone in the centre of a pulpy covering, as the plum or cherry.
 Dubium. Doubtful.
- Echinated. Covered with prickles, like a hedgehog.
 Elata. Tall.
- Emarginate. Having a small notch at the extremity of the leaf.
 Embryo. Germ of the young plant.
 Enclosed. Not projecting beyond the flower.
 Ensiform. Shaped like a sword with a straight blade.
 Epigynous. Growing upon the style, or ovary.
 Erysimum. From Eryo, to draw, because it will raise blisters.
 Eucharidium. From Eucharis; agreeable.
 Evolute. Not folded.
 Exserted. Projecting considerably.
 Exstipulate. Without stipules.
- Falcate. Curved like a sickle.
 Farinaceous. Floury.
 Fascicles. Bundles.
 Fastigate. The branches growing upright, and close together, like those of a Lombardy poplar.
 Feather-nerved. When the veins of the leaves are disposed regularly, like the feathery part of a pen.
 Female flowers. Those that have only pistils and no stamens.
 Fibrils. Small roots.
 Filament. The stalk part of the stamen, which supports the anther.
 Filiform. Thread-like.
 Fistular. Full of hollow pipes, or small tubes.
 Flammea. Flame-coloured.
 Flavum. Yellow.
 Floral leaves. Those on the flower-stalk.
 Floribundum. Many-flowered.
 Foliaceous. Leafy.
 Francoa. In honour of Don F. Franco, of Valencia, a patron of botany in the sixteenth century.
 Friable. Crumbling.
 Fructiferous. Fruit-bearing.
 Frustranea. With the florets of the disk bisexual, and those of the ray neuter.
 Funicle. A little stalk by which the seed is attached to the placenta.
 Fusiform. A descending root, like that of a carrot.
- Gallicum. French.
 Gaura. From Gauros; superb.
 Gigartoid. Seeds having a half transparent membrane round them, like the seed of the grape.
 Glabrous. Smooth, destitute of wool, hair, or down.
 Glaucouscent. Hoary and bluish, or sea-green.
 Glaucium. From Glaucous; a pale bluish, or sea-green.
 Glaucous. A bluish-green.
 Godetia. Origin not known.
 Grandiflora. Large-flowered.
 Gymnobases. A fleshy receptacle, bearing separate fruits.
 Gymnospermia. Having the seeds at the bottom of the calyx, and not in a capsule.
- Hastate. Halbert-shaped.
 Hermaphroditic flowers. Those that have both stamens and pistils.
 Heterogamous. Of various kinds.
 Heterophyllum. With leaves of various shapes.
 Hexandria. With six stamens.
 Hibiscus. From Ibis, a stork.
- Hilum or Hylum. The scar or mark on the seed which shows where it adhered to the placenta.
 Hispanica. Spanish.
 Hispid. Covered with short stiff hairs.
 Homogamous. All of one kind.
 Humilis. Of low growth.
 Hybridum. Hybrid.
 Hypogynous. Growing from beneath the ovary.
- Iberis. From Iberia, the ancient name of Spain.
 Imbricate. Laid over each other like scales.
 Imperforated. Apparently full of holes when held up to the light, like the leaf of the myrtle.
 Incumbent. Lying upon.
 Incurved. Bending inwards.
 Indefinite. Varying in number in different plants.
 Indehiscent. Not opening naturally when ripe.
 Inferior. Below the base of the stamens.
 Integrifolia. Entire-leaved.
 Inter-valvular. Between the valves, or parts into which the seed-vessel is divided.
 Involucre. The floral leaves when they surround the flowers.
 Involute. Rolled inwards.
 Isocandria. Having twenty, or more stamens.
- Junceum. Reed-like.
- Keeled. When two petals are joined together, or one is raised and curved in the centre, like the keel of a boat.
- Koniga. In honour of Charles Konig, Esq., F.R.A., &c.
- Lævigatum. Very smooth.
 Laciniated. Deeply cut into small parts.
 Laterally. On the sides.
 Latifolia. Broad-leaved.
 Lavatera. In honour of Lavater, the celebrated physiognomist.
 Legume. A seed-vessel which resembles that of the pea.
 Ligulate. Flowers shaped like a cornet of paper, open at the top and joined at the bottom.
 Limb. The spreading part of a flower, in opposition to the tubular part, or the claws.
 Linear. Line-like, long and slender.
 Lincar. Linear-leaved.
 Loam. A soil consisting of equal parts of clay and some much lighter soil; as for example, a sandy loam consists of clay and sand, and a calcareous loam of clay and chalk.
 Loasa. A fanciful name coined by Adanson.
 Lobules. Small lobes.
 Loculicidal. From each cell. When the carpels of a fruit do not part from each other when ripe, but each opens down the midrib, like the fruit of the Martagon lily.
 Lopezia. In honour of Lopez, a Spanish botanist.
 Loriform. Shaped like a thong, or strap.
 Luteum. Yellow.
 Lyrate. A lobed leaf, in which the terminal lobe is larger than the side lobes.
- Macrantba. Large-flowered.
 Maculata. Spotted.

Malcomia. In honour of Mr. Malcolm, a nurseryman at Kensington.

Male flowers. Those which have only stamens and no pistils.

Malesherbia. In honour of M. de Malesherbes, a French botanist.

Mathiola. In honour of P. A. Mathioli, an Italian physician.

Menonvillea. In honour of M. Thiery de Menonville, a French naturalist.

Mericarps. The two parts into which the seed-vessel of umbelliferous plants is divided.

Micrantha. Small-flowered.

Microcarpa. Small-fruited.

Miniata. Small.

Minima. The smallest.

Monandria. With only one stamen.

Monopsis. One-faced.

Moricandia. In honour of S. Moricand, an Italian botanist.

Mucro. A little sharp point, terminating a leaf.

Mucronate. Ending in a sharp point, termed a mucro.

Multifid. Many times divided.

Muricated. Covered with warts, or any short, hard excrescences.

Mutic. Pointless.

Naked. A naked seed is one without wings, &c.; and a naked branch, one without hair, down, leaves, &c.

Nerves. Veins of the leaves.

Necessaria. Composite flowers, in which the florets of the disk are male, and those of the ray female.

Nocturna. Night.

Nodes or Nodi. Swelled articulations of the stem, or knotted joints.

Nodosum. Knotted.

Numentaceous. Producing nuts.

Nytelea. From Nykteris, a bat.

Obcordate. Inversely cordate, or heart-shaped.

Obovate. Egg-shaped, with the broad end uppermost.

Obscote. Scarcely perceptible.

Obtusifolium. Obtuse-leaved.

Ochroleuca. Yellowish-white; from ochraceous, the colour of yellow ochre, and leukos, the Greek word for white.

Octandria. With eight stamens.

Odorata. Fragrant.

Oliverianum. From the name of Oliver, a traveller in the East.

Orbicular. Round, orb-like.

Orientalis. Eastern.

Ovaria. Incipient seed-vessels.

Palavia. In honour of Palau y Verdera, Professor of Botany at Madrid.

Paleæ. Scales of the involucre of composite flowers when mixed with the flowers.

Palmate. Hand-shaped.

Panicle. A loose spike of flowers or seeds; as for example, a panicle of oats.

Papillose. Covered with pimples.

Pappus. A feathery substance, attached to the seeds of the Compositæ, and other plants.

Papulæ. Globular protuberances filled with a watery matter like those on the Ice-plant.

Papulose. Covered with papulæ.

Parietal. When the placenta is very narrow, and in the middle of each valve.

Patula. Spreading widely.

Pedicels. Foot-stalks to the flowers.

Peltate. A leaf is peltate when the foot-stalk is fixed in the centre, like the leaf of the Nasturtium.

Pentaglottis. Five-tongued.

Pentagynia. Five styles.

Peregrinum. Pilgrim-like, or wandering.

Perennial. Lasting several years.

Perfoliate. Where the stalk seems to pass through the middle of the leaf, like that of the Honeysuckle.

Perianth. The entire flower, including the calyx.

Pericarp. The fruit, or covering of the seed-vessel.

Perigynous. Inserted in the calyx, or in the disk adhering to the calyx.

Persistent. Remaining on a long time.

Personate. When the flower is something like a mouth, as the Snapdragon.

Petals. Leaves of the flower.

Petioles. Footstalks to the leaves.

Phœniccum. Crimson.

Pilose. Hairy.

Pinnate. Consisting of several pairs of leaflets.

Pinnæ. The leaflets of a pinnate leaf.

Pistil. The seed-bearing part of a flower. A pistil consists of the ovary, the style, and the stigma.

Placenta. A membrane to which the seeds are attached in the capsule or pod.

Plicate. Folded.

Plumose. Feathery.

Plumula. The part of a seed which afterwards becomes the ascending shoot.

Pollen. The fertilizing dust, or yellow powder, borne on the anthers.

Polyandria. Many stamens.

Polygynia. Many styles.

Polymorphous. Of many forms.

Polyspermous. Containing many seeds.

Porrigenis. Widely-spreading.

Pinnulæ. The leaflets of a doubly pinnate leaf.

Prismatic. Shaped like a prism.

Profoundly. Deeply.

Puberulous. Covered with spreading down.

Pubescent. Covered with a soft whitish down.

Putamen. A nut of many cells.

Quadrangular. Four-sided.

Quadrivulnera. Four-wounded.

Raceme. When the flowers are dispersed round a central stalk or rachis, each being on a short stalk.

Racemose. When the flowers are produced in racemes.

Rachis. The central axis of a cone, or of a spike or raceme of flowers.

Radiate. A composite flower, consisting of disk and ray flowers, like the Daisy.

Radical. Rising from the root.

Radical leaves. Those rising from the root.

Ray. That part of a composite flower the florets of which are ligulate.

Receptacle. The part at the upper end of the pedicel or foot-stalk that supports the different parts of the flower.

Reflexed. Bent back.

Reniform. Kidney-shaped.

Repend. Undulated and dilated in the margin.

Resupinate. Inverted; turned in an opposite direction to what is usual.

Retorta. Twisted, turned back.

Retuse. Appearing as if bitten off.

Rheas. From the Greek word for a Wild Poppy, or from the Saxon for red.

Ricotia. Derivation not known.

Ringent. Gaping, like the flower of the Sage.

Rotate. Wheel-shaped.

Rudimentary. Imperfectly developed.

Runciate. When the lobes of a leaf are hooked back, and gradually diminish to the base.

Saccate. Bagged, projecting at the base in the form of a bag or pouch.

Sagittate. Arrow-shaped.

Salicifolia. Willow-leaved.

Sativa. Cultivated.

Scabrous. Rough or scabby.

Scarioso or Scarios. Membranous and dry.

Scorpioid. Broom-like.

Scyphanthus. From Scyphos a cup, and Anthos a flower.

Secund. Arranged on one side only.

Segetum. Corn.

Segments. The cut divisions of a leaf or flower.

Segregata. Composite flowers in which each floret has its own involucre.

Sempervirens. Evergreen.

Sepals. Leaves of the calyx, or outer covering of the flower.

Septicidal. Dividing into several parts. When a seed-vessel is composed of several distinct carpels, which part from each other when the seed is ripe, like the fruit of the Rhododendron.

Serrated. Cut like the teeth of a saw.

Sessile. Without any foot-stalk.

Setose. Bristly.

Silenc. From the heathen deity Silenus; the froth on the plants being compared to that from the mouth of a drunken man.

Siliqua. A long slender pod, like that of the Radish or Cabbage.

Siliquosa. Having the seeds in long round pods, like the Cabbage.

Silicle. A small short pod, like that of the radish.

Sinuate. Hollowed out or scalloped.

Sinuses. Scallops, or hollowed-out parts.

Spathe. A broad leaf enwrapping and enclosing the flowers before they expand.

Spatulate. Shaped like the broad pointed knife used by druggists in spreading plasters.

Spike. When the flowers are disposed round a central stalk or axis, without any short stalks.

Spikelets. Small spike-like branches, diverging from a spike of flowers.

Spirate. Twisted outwardly in the shape of a screw, like the bud of the Ipomœa.

Spongiole. The soft porous part at the extremity of each root, intended to imbibe moisture for the nourishment of the plant.

Squarrose. Spreading stiffly at right angles.

Stamens. Thread-like substances found in the centre of every flower, which produce the fertilizing dust called the pollen, and which consist of two parts, the filaments and the anther.

Stellate. Star-like; generally applied to little tufts of hair or down.

Sterile filaments. Without anthers.

Sterile. When applied to stamens or anthers, signifies devoid of pollen.

Strigæ. Stiff upright hairs, swelled out at the base.
Stigma. The upper part of the pistil, intended to receive the pollen and convey it down the style to the ovarium.
Stigmata. Stigmas, or the divisions of the stigma.
Stipe. The little stem that supports the seed-vessel or ovary in the centre of the flower.
Stipate. Furnished with a stipe.
Stipules. Small leaves or membranes at the base of the petioles, or foot-stalks, of the leaves.
Stoloniferous. With the roots extending under the ground, like those of the Couch-grass.
Striatum. Striped.
Style. That part of a flower which is between the ovary and the stigma.
Suaveolens. Very sweet-scented.
Sub. Somewhat, or rather.
Subnuculentaceous. Producing a few nuts.
Subulate. Awl-shaped, tapering to a point.
Succulent. Easily broken and full of juice.
Suffruticose. Half shrubby.
Superflua. Composite flowers which have the florets of the disk bisexual, and those of the ray female.
Superior. Above the base of the stamens.
Sureuli. Young shoots.
Suture. Where the seed-vessel opens naturally on only one side, like the pod of the pea, &c.
Syngesia. Composite flowers.
Tap-root. A long descending root, like that of the Carrot.

Taraxacifolia. Dandelion-leaved.
Terate. Round and long, cylindrical.
Terminal. At the extremity of the shoots and branches.
Testa. The skin or covering of the seed.
Tetradynamous. Having six stamens, four of which are longer than the other two.
Tetragonal. Four-sided.
Tetragynia. With four styles.
Tetra-hexandria. Sometimes four and sometimes six stamens.
Tetrandria. With four stamens.
Tetra-polygynia. With four or many styles.
Tetraptera. With a four-angled capsule.
Tomentose. Woolly.
Torulose. Uneven, alternately elevated and depressed.
Torus. The part or receptacle which spreads out below the ovary, and supports the rest of the flower.
Trachymene. From two Greek words signifying a rough membrane, in allusion to the coat of the fruit.
Transversely. Across.
Trichotomous. Produced in threes.
Trifid. Three-cleft.
Trigynia. Three styles.
Trilobum. Three-lobed.
Triquetrous. Three-cornered.
Triternate. A leaf composed of three parts, each consisting of three leaflets.
Trivalve. Three-valved; that is, with three valve-like openings.
Truncated. Appearing as if the end had been cut off.

Tubercles. Warts.
Tubular. Joined together so as to form a tube, applied to the hidden part of the Convallulus, &c.
Tumid. Swollen.
Turbinate. Having the figure of a top.
Turgid. Tough, not brittle.
Umbellata. Umbel-like.
Umbilical cords. The strings by which the seeds are sometimes attached to the ovary, as in the Magnolia.
Umbilicus. The part by which the seed is attached to the placenta.
Unarmed. Without prickles.
Undulata. Waved.
Unguiculate. Clawed; when the petals of a flower become suddenly narrow, like those of the Pink or Carnation.
Unilateral. One-sided.
Usitatissimum. Much-used.
Utricle. A little thin bladder or membrane.
Vernalis. Spring.
Versatile. Hung so lightly on the stalk as to move with every breath.
Verticillate. Whorled.
Vexillum. The upper erect part or standard of a Pea-flower.
Villous. Clothed with soft long hairs.
Violaceum. Violet-coloured.
Virgate. Rod-like.
Vulgaris. Common.

AUTHORITIES AND BOOKS REFERRED TO.

Adan. Adanson, a French botanist, author of the *Familles des Plantes*, &c.
Ait. William Aiton, Esq., Director of Royal Gardens, and author of the *Hortus Kewensis*.
All. Allioni, an Italian botanist, author of many works.
Alp. Dec. M. Alphonse De Candolle, son of Professor De Candolle, of Geneva.
Andr. Andrews, author of the *Botanical Repository* and other works.
Balb. Signor Balbis of Turin, author of *Flora Taurinensis*, &c.
Bauks. Sir Joseph Banks.
Barton. Two American botanists.
Bauh. Bauhin, two brothers, both eminent botanical authors.
Beauvois. A French botanist, who published a work on the plants of Africa in 1818.
Benth. George Benthham, Esq., Secretary to the London Horticultural Society.
Berg. Bergeret, a French botanist, author of a work on the plants found on the Pyrenees.
Bieb. Marschall de Bieberstein, author of the *Flora Taurico-Caucasica*, and other works.
Biv. Bivona of Palermo, a Sicilian botanist.
Bot. Gard. See Maund.
Bot. The Botanist, conducted by B. Maund, Esq., 2 vols. to the end of 1839.

Bot. Mag. The Botanical Magazine; conducted first by Mr. Curtis, afterwards by Dr. Sims, and now by Sir W. J. Hooker. 65 vols. to 1839.
Bot. Reg. The Botanical Register, 25 vols. to 1840; now conducted by Dr. Lindley.
Brot. Brotero, a Portuguese, author of the *Flora Lusitania*.
Buehoz. A French botanical author.
Bull. Bulliard, a French botanical author.
Burchell. Author of *Travels in South Africa*, &c.
Cass. Cassini, an Italian botanist.
Cav. Cavanilles, Professor of Botany at Madrid.
Cham. Chamisso, a German naturalist, who has long resided in Russia.
Chav. Chavannes, author of *Monographie des Antirrhinées*, published at Geneva.
Choisy. A Swiss botanist.
Church. Churchill's Medical Botany, 2 vols.
Clarke. Author of *Travels in various countries of Europe*, &c.
Coult. Coulter, author of *Mémoire sur les Dipsacées*, published at Geneva.
Crantz. A German botanist, author of many works.
Curtis. A nurseryman at Lambeth, author of many works, and who established the *Bot. Mag.* in 1787.

Curt. Fl. Lond. Curtis's *Flora Londinensis*, 2 vols. 1777.
Cun. Cunningham, an English botanist, well known for his researches in Australia.
D. Don. Professor of Botany in the King's College, and Librarian to the Lin. Soc.
Dec. Professor De Candolle, of Geneva, author of many botanical works.
Del. Delessert, a French botanical author.
Deppe. One of the writers in the *Linnæa*.
Desf. Des Fontaines. A French botanist, who travelled in Africa; author of many works.
Dom. Dombey, a French botanist.
Donn. Author of *Hortus Cantabrigiensis*, &c.
Dougl. Douglas, a collector sent out to California by the London Horticultural Society.
Dufr. Dufresne, author of *Histoire Naturelle*, &c., de la Famille des Valerianées.
Dum. Du Mont de Courset; a French botanist, who had a splendid collection of plants in his garden near Boulogne.
Dun. Dunal, a French botanist, author of several works.
Ehret. Author of *Plantæ et Papilionæ rarioræ*. London, 1748.

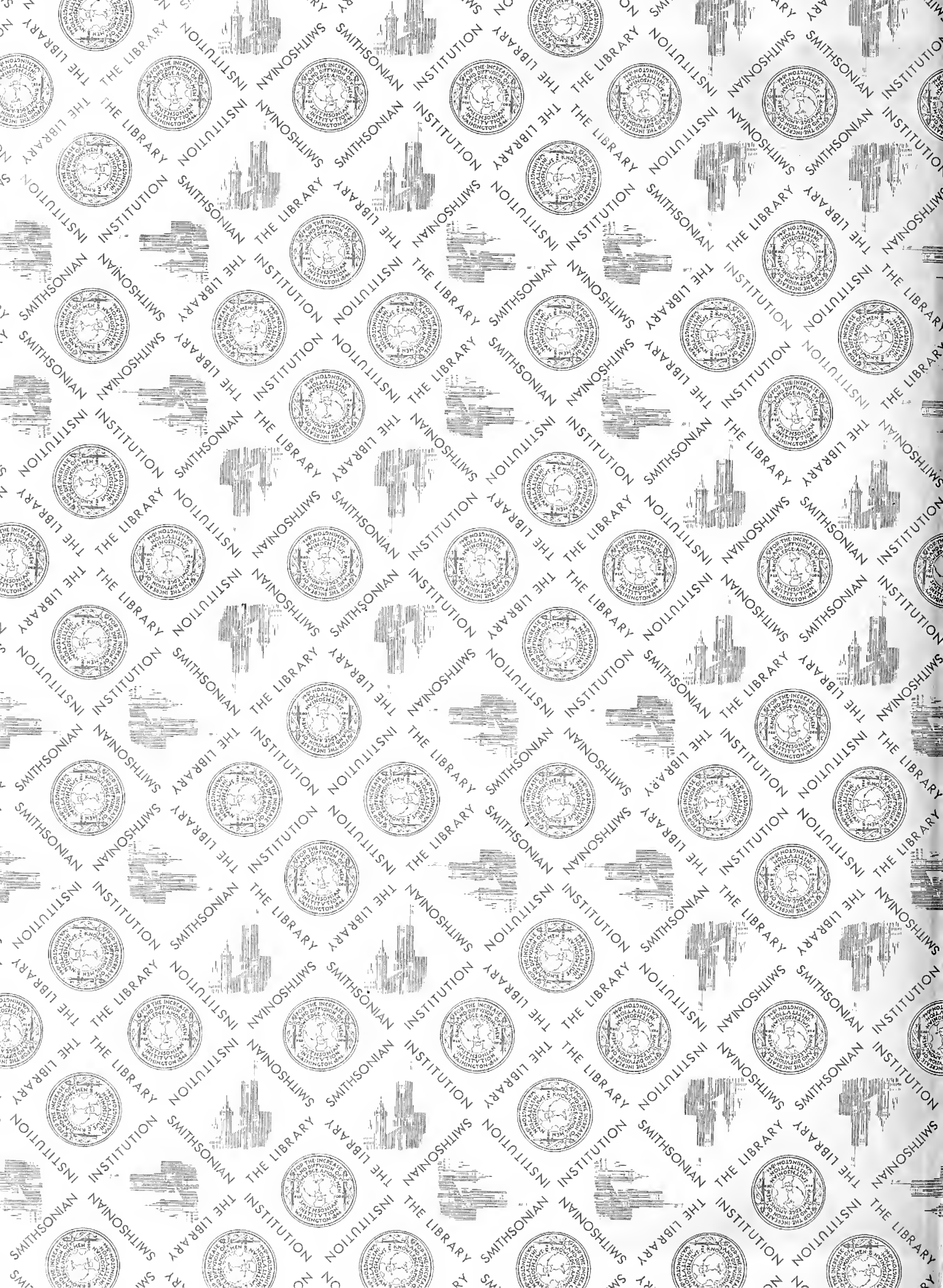
- Ell. Elliot, author of a Sketch of the Botany of South Carolina and Georgia.
- Eng. Bot. English Botany, 36 vols. By Sir J. E. Smith, the plates by Sowerby. The second edition of this work is arranged according to the Linnean system.
- Fisch. et Meyer. Fischer and Meyer, Russian botanists.
- Fl. Cab. Floral Cabinet, conducted by Messrs. Knowles and Westcott, 3 vols.
- Fl. Hist. Flora Historica, by Phillips, 2 vols. London.
- Forsk. Forskaol, a Danish botanist, author of several works on the Flora of Egypt, &c.
- Foug. Fougereux de Bondaroy, a French botanist.
- Fuchs or Fuchsius. A German botanist, author of a Latin history of Plants, published at Basil in 1542.
- Gart. Gärtner. There are two botanical authors of this name, father and son.
- Gault. Dr. Gauthier, a French writer on maple sugar.
- G. Don. George Don, Esq., author of a General System of Botany, &c. &c.
- Gill. Dr. Gillies, a traveller in South America.
- Glox. Gloxin, author of *Observationes Botanice*, Strasburg.
- Gmel. Gmelin. There were several botanists of this name, one of whom wrote the *Flora Sibirica*.
- Graham. Dr. Graham of Edinburgh.
- Guss. Gussone, a Neapolitan writer on plants.
- Ham. Dr. Buchanan, who afterwards took the name of Hamilton. A writer on Nepal plants.
- Hayne. A German botanical author.
- H. B. et Kunth. Humboldt, Bonpland, and Kunth, who wrote conjointly on the plants of South America.
- Hoff. G. F. Hoffman, a German botanist.
- Hoffm. et Link. Hoffman and Link, authors of the *Flora Portugaise*.
- Hook. Sir W. J. Hooker, Professor of Botany at Glasgow, and Editor of the *Bot. Mag.*
- Hook. et Arnott. Sir W. J. Hooker, and Dr. Arnott, in a work on the Plants of South America.
- Horn. Horneman, a Danish botanist, one of the authors of the *Flora Danica*.
- Hort. Berol. Hortus Berolinensis, Catalogue of Plants in the Berlin Garden.
- Hort. Duro. Hortus Duroverni, a Catalogue of the Plants, &c., in the Canterbury nursery.
- Hortus Kewensis. A work in 5 vols., containing a Catalogue of the Plants cultivated in the Botanic Garden at Kew.
- Hort. Hortus, or Hortulanus, of gardens, or of gardeners; meaning a name common in gardens before it was recorded in any book.
- Houst. Houston, author of some papers in *Phil. Trans.*
- Jaeq. The Baron Von Jaequin, of Vienna, author of many botanical works.
- Juss. Jussieu, the establisher of the Natural System of Botany.
- Ker. H. Bellenden Ker, Esq., for some time Conductor of the *Bot. Reg.*
- Kunth. Author of the *Flora Berolinensis*, and other works.
- Knowl. et West. G. B. Knowles and F. Westcott, Esqrs., Conductors of the *Floral Cabinet*.
- Lag. La Gasca, Professor of Botany at Madrid in 1811; author of many works.
- La Llave et Lxarsa. Spanish botanists, who wrote on the plants of Mexico.
- Lam. Lamarck, a French botanist, one of the authors of the *Encyclopédie Méthodique*.
- Lapey. La Peyrouse, author of the History of the Plants of the Pyrenees, &c. &c.
- Ledeb. Ledebour, a Prussian botanist, author of *Flora Altaica*, &c.
- Lehm. Lehman, a German botanist, author of many works.
- Leyss. Leysser, a German botanist.
- L'Herit. L'Heritier, a French botanist, author of many works.
- Lindl. Dr. Lindley, author of the *Ladies' Botany*, and many other Botanical works.
- Lin. Linnæus.
- Lin. jun. The son of Linnæus.
- Lin. Syst. Linnean System.
- Link. Professor of Botany at Gottingen.
- Link and Otto. Professor Link, and M. Otto, curator of the Berlin Bot. Gard., authors of several works.
- Lour. Loureiro, author of the *Flora Cochinchinensis*, Lisbon, 1790.
- Mart. Mill. Professor Martyn's edition of Miller's Dictionary, published in 1787.
- Maund's Bot. Gard. The Botanic Garden, conducted by B. Maund, Esq., 3 vols. to the end of 1839.
- Michx. Michaux, father and son; two French botanists, who wrote on the plants of North America.
- Mill. Philip Miller, author of Miller's Dictionary.
- Mill. Dict. The Gardener's Dictionary.
- Moc. et Sess. Mocino and Sessé, two Spanish botanists, who published the *Flora Mexicana*.
- Mench. A German botanist, author of many works.
- Moris. Morison, an old English botanical author in the 17th century.
- Murr. J. A. Murray, Esq., an English botanist, who published a work on the Linnean System, &c.
- N. Burm. Nicol Burmann, a Dutch botanist, author of several works.
- Neck. Necker, author of *Elementa Botanica*, &c.
- Nees von Essenbach. Author of *Horæ Physicæ Berolinensis*, &c. Bonn, 1820.
- Nutt. Nuttall, an American botanist, author of several works.
- Ortega. A Spanish botanist, author of the Continuation of the *Flora Espanola*.
- Pers. Persoon, author of a work on Fungi, &c.
- Pliny. The ancient Roman naturalist.
- Pœpp. Pœppig, author of Travels in South America.
- Pohl. Author of *Plantarum Brasiliæ*, &c., published at Vienna.
- Poir. Poiret, a French botanist, one of the authors of the *Eucyc. Méthodique*.
- Pursh. The author of a *Flora of North America*.
- Ræuseh. Rænschel, author of an enumeration of plants, &c., published at Leipsig.
- Raf. Rafinesque, an American; author of the *Medical Flora of the United States*, &c.
- R. Br. Dr. Robert Brown, author of many works.
- Reich. Reichard, author of several botanical works published at Frankfort.
- Retz or Retzius. A German botanical author.
- Rich. Richard, father and son, French botanists, authors of many works.
- Riv. Rivinus, a German author of several works.
- Rœm. et Schultes. Rœmer a Swiss, and Schultes a German, who wrote conjointly *Systema Vegetabilium*, 7 vols., &c.
- Roth. A German botanical author.
- Roxb. Dr. Roxburgh, author of *Hortus Bengalensis*, &c.
- Ruiz et Pavon. Two Spanish botanists, who wrote the *Flora Peruviana*, &c.
- Sal. R. A. Salisbury, Esq., author of several botanical works.
- Schlecht. Professor Schlechtendal of Berlin, conductor of the Linnea, and author of many botanical works.
- Schmidt. Author of *Flora Bohemica*, &c.
- Schott. A German botanist residing at Leipsig.
- Schou. Schousboa, a Swedish botanist, who wrote on the plants of Morocco.
- Schrad. Schrader, a Hanoverian botanist, author of several works.
- Scop. Scopoli, author of the *Flora Carniolica*, &c. &c.
- Shaw. Author of Travels in Barbary and the Levant, &c.
- Sib. et Fis. Dr. Sibthorp, a celebrated botanical traveller, and one of the authors of the *Flora Græca*; and Dr. Fischer, Director of the Imperial Botanic Garden at St. Petersburg.
- Sib. et Smith Fl. Græc. Dr. Sibthorp and Sir James Edward Smith in the *Flora Græca*.
- Sims. Dr. Sims, for many years editor of the *Bot. Mag.*
- Smith. Sir James Edward Smith, author of many botanical works.
- Spach. A German botanist residing in Paris, celebrated for making many new species and genera.
- Spreng. Sprengel, a German botanist, author of many botanical works.
- Stev. Steven, author of several works on the plants of Russia.
- Swt. Brit. Flow. Gard. The British Flower Garden, by Robert Sweet, 7 vols.
- Swt. Robert Sweet, author of the British Flower Garden, and several botanical works.
- Tausch. Author of several botanical works, published at Prague.

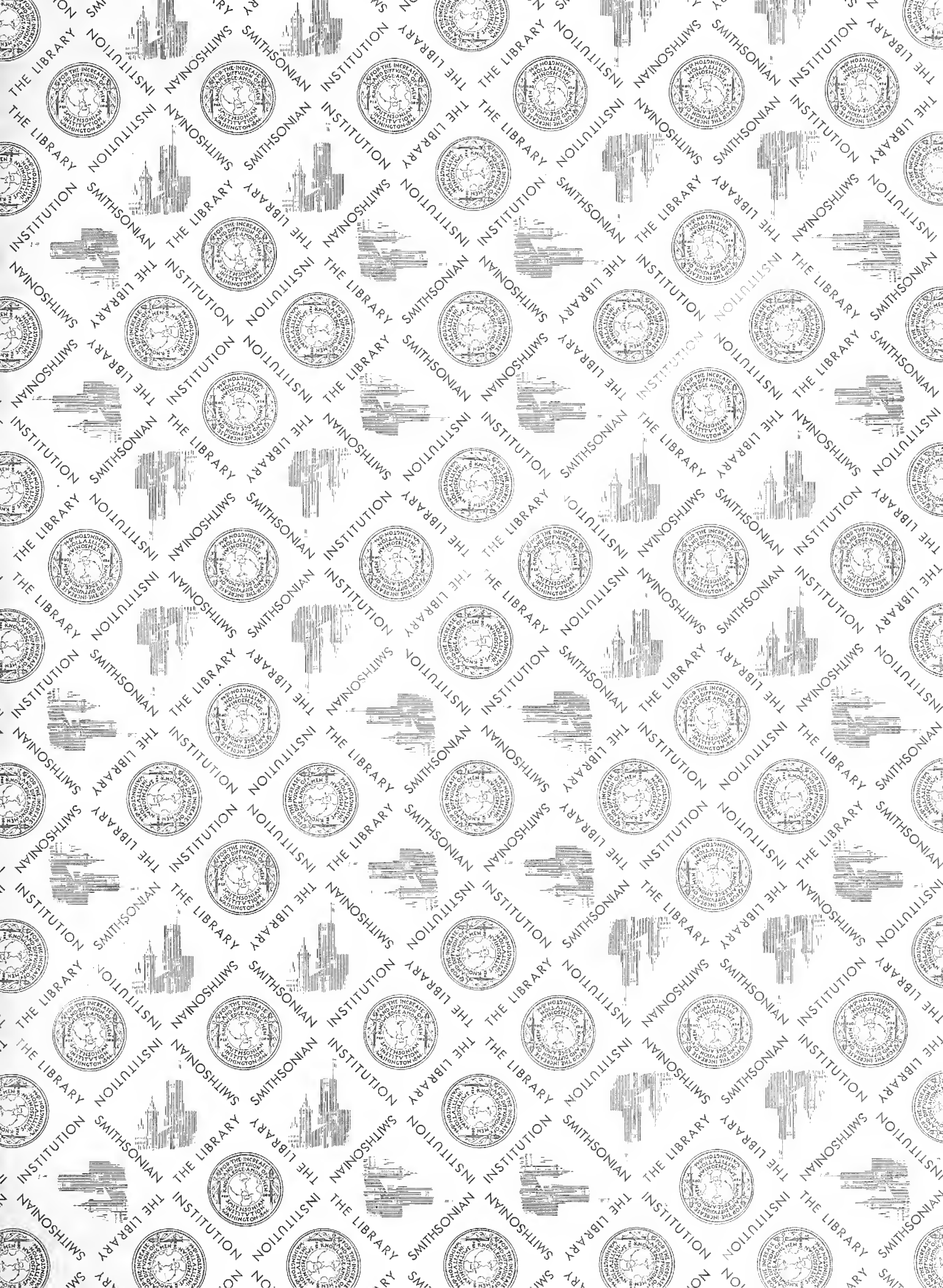
Tenore. Author of the Flora Neapolitana, &c.	Vahl. A Danish botanist, author of many works.	Walds. et Kit. Waldstein and Kitaibel, who wrote on the Plants of Hungary.
Thore. Author of Observations in the Journal Botanique.	Vent. Ventenat, a French botanist and botanical author.	Wallr. Wallroth, a German botanist.
Thun. Thunberg, author of the Flora Japonica, &c. &c.	Vig. Viguiet, a French botanist, who wrote the Natural History of Poppies and Argemones.	Walt. Walter, author of the Flora Caroliniana.
Tourne. Tournefort, a botanical author, who published a System of Plants founded on the shape of the flower, a little before that of Linnæus.	Visiani. Author of Plantæ Dalmaticæ, &c.	Wein. Weinmann, a German botanist, author of several works.
	Viv. Viviani, author of Flora Corsicæ, &c., published at Genua.	Willd. Willdenow, a German botanist, author of many works.
		Wood. Med. Bot. Woodville's Medical Botany, 4 vols.

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